

HAPPY HOME
HEALTH
GUIDE

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AT THE FIRESIDE.

At nightfall by the firelight's cheer
 My little Margaret sits me near,
 And begs me tell of things that were
 When I was little just like her.

Ah, little lips you touch the spring
 Of sweetest sad remembering,
 And hearth and heart flash all aglow
 With ruddy tints of long ago.

at my father's fireside sit
 Youngest of all who circle it,
 And beg him tell me what did he
 When he was little just like me.

JOHN D. LONG



THE

HAPPY HOME

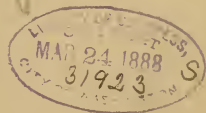
HEALTH GUIDE

BY

B. C. MORGAN, M. D.

proved.

Celia M. Haynes



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1887.

TO THE
MOTHERS OF AMERICA,
FAMILY PHYSICIANS
OF NATURE'S OWN MAKING, THIS LITTLE VOLUME IS
RESPECTFULLY DEDICATED, BY
THE AUTHOR.



PREFACE.

"Of making books there is no end," exclaimed the Wise Man nearly a thousand years before our era, and yet the work of making books has been so diligently pursued that throughout the world printing presses are running day and night, turning into print the written thoughts of a multitude of teeming brains.

In the light of Solomon's declaration, that "there is nothing new under the sun," it excites wonder as to what authors can find to say that has not been said over and over again.

A new book, to merit favorable notice in our day, must serve some practical purpose, either to amuse, to instruct, or to console.

What, then, is the purpose of the author in presenting this book as a claimant of your favor? Dr. Johnson said: "Mankind needs not so much to learn what is new, as to be reminded of what is already known."

Therein lies one reason, and because the prevention of disease is of more benefit to the race than merely helping those who have broken Nature's Laws to escape her penalties; again, it makes no difference how well written, how thorough and exhaustive any book may be, medicine, and especially the art of preventing sickness, is a progressive science. Important discoveries are constantly being made; new experience changes the old practice; certainty, little by little, is taking the place of theory, so that a book which at one time may be justly regarded as good authority, in a few years is out of date. It was the design of the writer to present in plain language, that any one may understand, those facts one needs to know to preserve the health, to escape avoidable causes of disease, and to fully develop the physical powers. Considerable attention has been given to the needs of infancy and childhood, because there is too little effort put forth to protect the young from hereditary tendencies and to overcome natural weaknesses, through special care in diet, ventilation, and other hygienic measures. A very complete chapter on "Accidents and Emergencies," carefully

arranged for ready reference, it is hoped will prove helpful in the ordinary accidents that are liable to occur everywhere.

The subjects treated of are described according to the latest discoveries, and best authorities, supplemented by personal experience.

The science of Medicine can be mastered only by those who devote a lifetime to it. It is built upon the accumulated experience of ages, collected and preserved by members of the profession. The public are prone to forget that all knowledge of physiology; all that is known of chemistry, that art which has given rise to some of the most important manufacturing industries of the world; all sanitary knowledge, which in many localities has transformed the face of nature in the interests of health, originated with the medical profession. It is to the quiet, observant plodders, who learned the needs of humanity at the bedside of the sick and suffering, and, although worn and exhausted by incessant demands upon their strength and skill, took time to note down their observations for the benefit of those who came after them, that we are indebted for medical science. In this way the experience of one generation has overlapped the next, and gradually the science of medicine has grown into an edifice of such dimensions that no man expects to compass the whole of it within the limits of a lifetime. There are many aspiring to the title of Doctor who are mere parasites upon the profession, and this class has brought disrepute upon it, so that it has become the fashion to scoff at doctors and to ignore the noble work they have accomplished. To write a single book upon medicine and claim that it contains all of value there is known, is clearly impertinent, and stamps the writer as an ignoramus. The pages that follow are not a complete epitome of the whole science; they contain but the A, B, C of physiology and medicine; the knowledge every intelligent man and woman should possess in order to ward off disease; to manage simple ailments which do not require a physician; to meet the emergencies that are liable to arise in every family; and to recognize the need of a physician in cases demanding skillful treatment from the outset. A little knowledge well digested is of more value than a whole encyclopedia of information that leaves one in doubt, after all, what to do. This book, then, is designed as a *guide*, and does not claim to be a *complete medical adviser*, to the exclusion of the Family Physician, who, after all, is a friend that cannot, and ought not to be, dispensed with.

B. C. M.

3838 Dearborn street, Chicago.

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INTRODUCTION.

"In the beginning, God created the heavens and the earth. And God made the beast of the earth after his kind, and everything that creepeth upon the earth after his kind; and God saw that it was good.

And God said, "Let us make man in our image, after our likeness; and let him have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. And God saw everything that he had made, and, behold, it was very good."

In the days immediately following the creation men lived long, and when their work was done died of old age, after a century or more of active existence.

Although the average length of life is greater now than at any time since the world drifted into the state of mental darkness known as the "dark ages," yet it barely reaches 45 years in our day. There are now known and described no less than 899 distinct diseases, which afflict the human race, and nearly three-fourths of the people on the globe are sick in some way each year. It is estimated that in our own land, which we believe to be the most intelligent on the globe, there are annually 100,000 deaths from diseases produced, or propagated, by foul air, impure water or pernicious food, and therefore easily preventable. Clearly, mankind has greatly deteriorated, physically, since the period when God, contemplating his finished work, pronounced it good. The death rate among the young of our race is frightfully in excess of that among the young of domestic animals. It is said that no more than ten per cent. of the young of cattle, and only five per cent. of horses, perish annually from disease, while the death rate among babies and young children in our larger cities during the summer runs up to fifty per cent., and even higher, while the average for the year, taking city and country together, is fully forty per cent.

How much better off the little ones would be if they bore a fixed market value, like pigs, and calves, and colts.

Those who die represent but a comparatively small per cent. of those who suffer from sickness, and are not only unable to care for

themselves, but require the time and labor of one or more well people. This throws a burden upon the healthy, for which mere dollars and cents can never pay.

Taking into account the suffering from loss of loved ones, which cannot be computed in money; the loss of labor on account of sickness and caring for the sick; the amount expended for medicines, doctors and luxuries for invalids (which keeps many a family in poverty, and unable to make provision for the inevitable "rainy day"), the tax which ignorance imposes upon society is immense.

The knowledge necessary for protection against preventable diseases is easily acquired by all who seek it; the conditions which insure good health are simple, and may be summed up under seven heads, as follows:

1. Fresh air to breathe.
2. Pure water to drink.
3. Clean houses to live in.
4. Good drains to keep the premises clean.
5. Suitable clothing, adapted to the climate.
6. Nourishing food.
7. Good habits.

Physiology is usually regarded as dry and uninteresting, therefore it will be gone into only far enough to make plain the practical facts that follow it, and it is hoped that the reader will not ignore this subject altogether.

The first condition of a "Happy Home" is perfect health. The jarring and discord which destroys the happiness of families originates more frequently than is suspected in an irritated nervous system, a congested brain, or a dyspeptic stomach. That pleasant state of life in which it is a luxury to breathe, in which there is no reminder that such organs as a stomach, a liver, or a brain exist, makes toil twice as effective, and oils the machinery of daily life so that petty frictions pass unnoticed, or are easily endured. The mother is the natural physician for the family, because her watchful, intelligent care is ever at hand, quick to discern the approach of peril, full of resources to undo the results of injurious exposure, or accident, while the home, with its surroundings, is largely under her supervision. The remedy, then, for preventable diseases lies with the women, and they incur a grave responsibility in neglecting to inform themselves in all that tends to the preservation of the health and lives of those intrusted to their guardianship.

CHAPTER I.

THE FRAMEWORK OF THE HOUSE WE LIVE IN.

The framework of the human body is formed of nearly 200 distinct bones, of various shapes and sizes. For convenience of description they are divided into long bones, of which those forming the limbs are examples, and flat bones, like those inclosing the brain. They give shape to the body, contain and protect the vital parts, and act as levers to the muscles. If you have never seen a human bone divested of flesh, and are curious to know what it looks like, examine one from a leg of beef and mutton. It is made of exactly the same material as your own bones, and in the same proportion. There is in the center a cavity filled with a fatty substance, commonly called "marrow," or, sometimes, "oil of bones." Around this is a solid layer filled with tiny holes, which shows very distinctly where the flesh has been boiled off. This soft part the doctors call the "spongy bone;" it forms most of the thickness, but around the outside of it is a layer, much harder and more compact, covered by a thin skin which adheres very closely to it; the name of this skin or covering is the *periosteum*, which means "around the bone." It will be noticed that everywhere those bones in which great strength is needed are hollow. Man has discovered, taking a hint from Nature, that a hollow tube or column is stronger than a solid one; it is lighter in weight and less brittle. The long bones in the body, being made up of a thick, spongy, slightly elastic inner layer, and a thin, hard and more brittle outside layer, will stand greater violence without breaking than any kind of a lever or support which man has made. In our school days we were taught that all things in nature belong to the animal, vegetable or mineral kingdoms, or, in other words, all living things are either animal or vegetable, and all substances which have no life or cannot grow belong to the class of minerals, such as rocks, sand, clay, the precious metals and many drugs. There are other terms with which we must be familiar before we examine the bones further, namely, organic and inorganic. Objects that are alive, or substances that once belonged to living objects, form or

ganic matter, while those derived from the mineral kingdom are inorganic. We shall have frequent occasion to employ these and other scientific terms as we proceed, and it is just as well to use the right words, provided we mutually understand their meaning, as here employed. To resume our subject, the hardness of bone depends upon the proportion of mineral matter which it contains. All bones contain considerable phosphate of lime (the same material which makes the outer coat of a grain of wheat so hard), and several other minerals, all held together by an animal substance or organic matter. The mineral substances may be removed from a bone without destroying its shape, by soaking it for several days in a glass jar containing water made very sour with muriatic acid; this makes it very flexible, and if long enough it may be tied in a knot without breaking. The substance left after removing the mineral is principally gelatine or glue. The animal matter may be removed from a bone, leaving only the minerals, by burning it. Throw one on the coals and leave it till it will burn no more, it will then be seen to be very white and brittle, easily crumbling; it can be pounded or ground into a dry white powder. The animal matter holds the salts together and makes the bone tough; if there be too large a proportion of it they will bend easily, and in growing children such bones are liable to become curved or crooked.

The proportion of animal matter to mineral is always greater in children than in adults, therefore their bones will bend before they will break; and when they do break they will not snap in two, making a complete fracture, but, like a green stick, some fibres will break and some will not, so surgeons often speak of a broken bone in a child as being a "green stick fracture." It is a very good thing that their bones are in this state, for the numerous tumbles the little folks are sure to have while learning to walk would make sad havoc with their bones if they broke like those of older people. As we advance in life the structure of the body is continually changing; the bones gradually receive a larger proportion of mineral than of animal material, and become more brittle, so that in old age they are easily broken. The writer once saw an old gentleman suffering from a broken leg, produced while drawing on a boot that did not go on easily. In another case an old lady, on attempting to arise from a rocking-chair, twisted her hip slightly and broke off the neck of the thigh bone; this accident caused her intense suffering for many months, until finally death came to her relief. People, as they grow old, cannot be too careful in walk-

ing over slippery places, going up and down stairs, or lifting heavy weights. Many people have a singular reluctance to believe themselves enfeebled by age, or incapable of doing anything they ever could do,

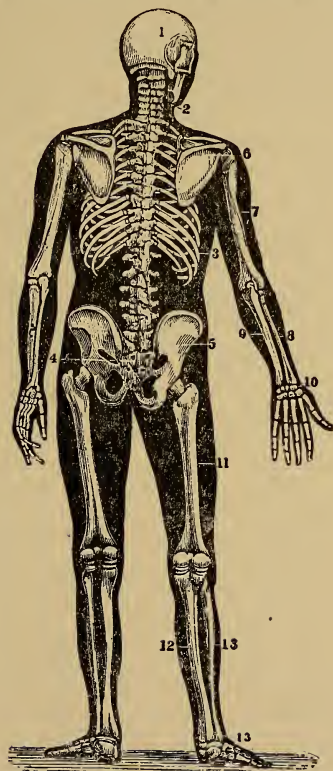


FIG. 1. THE SKELETON.

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|------------------------|-------------------------------------|----------------------------|
| 1. Skull. | 6. Shoulder-blade. Scapula. | 11. Thigh-bone. Femur. |
| 2. Lower jaw-bone. | 7. Long bone of arm. Humerus. | 12. Shin-bone. Tibia. |
| 3. Ribs. | 8. Slender bone of fore-arm. Ulna. | 13. Outer bone of the leg. |
| 4. Lower end of spine. | 9. Strong bone of fore-arm. Radius. | Fibula. |
| 5. Hip-bone. Ilium. | 10. Wrist-bones. Carpus. | |

therefore they should be guarded as much as possible by younger members of the family from taking risks that may result in dangerous or

painful injuries. In some families the children seem to have unusually brittle bones, which are snapped in two by slight falls; in such cases there is nothing to be done except to guard them as much as possible from accident, and to be more than ordinarily careful of their diet and habits of eating, so that they may be well nourished. There is a disease of childhood, exceedingly common among the very poor, in which the bones are not supplied with sufficient mineral matter; they are softer than usual and bend beneath the weight of the body, producing bow-legs or bandy-legs, knock-knees, or deformed joints. This subject will be treated of separately later on.

Joints.—The bones are united by joints, of which there are two kinds—the movable and immovable.

A table knife has the blade fixed in the handle, so that it cannot move; this is one form of immovable joint. The blades of a pocket-knife, which open and shut, form with the handle one kind of movable joint, very much like our elbow; this is known as the hinge joint. We have also ball and socket joints, of which the shoulder and hip joints are examples.

A joint, then, is a place where two bones join together; they are held in place by strong bands, called ligaments. The ends of the bones forming the joint are covered with a thin, smooth layer of gristle or cartilage, which is elastic and serves the same purpose as india rubber buffers placed on machinery to lessen shock; in all the movable joints there is a fluid like white of egg, called “joint water,” or “joint oil,” which keeps the ends of the bones lubricated, so that they move without friction. Around the joint is a small closed sac called the fibrous capsule, inside of which the two bones play, but they cannot pass beyond a certain limit. Place two round sticks end to end, glue around them a piece of linen; this will represent the fibrous capsule and give a very good idea of a joint; it will be seen that while the sticks can move freely they cannot be separated, in any position, except by force. A very curious property of this capsule is that it may be cut or pricked without pain; but if the limb be pulled, twisted, or in any way injured, so as to separate the ends of the bones, the capsule immediately becomes the seat of severe pain. It only knows its own password. In children it can be stretched much more than in later life. Contortionists, who can twist themselves into all sorts of unnatural shapes, begin to learn the business when very young, and a very cruel business it is. Older people have tough capsules, which make the joints very strong;

in the old they are liable to be incrustated with lime (something like tea kettles where hard water is used), making the joints stiff, so that it is difficult to stoop or use the limbs freely. Another word about the "joint water," or, to use the doctors' term, "synovial fluid:" it is necessary that the joint be frequently used or this fluid will dry up, and when it does the consequences are very bad. The smooth, white cartilages on the ends of the bones forming the joint inflame, swell, and grow together, so that the joint is no longer movable; it becomes "anchylosed," or locked. There is no danger in a day or two; it is a protracted sickness which confines one in the same position a long time, or a broken bone which does not do well and must be kept a long time motionless, that causes the mischief. Doctors make such patients begin as soon as possible to go through various motions that seem useless, on purpose to keep the "joint water" fluid and prevent stiff joints. It is very important that mothers understand why this exercise is necessary, because children, if left to themselves, will never attend to it, and may, in consequence of neglect to enforce motion, become cripples for life. We must not omit to mention the ligaments which strengthen the joints. They are stout, fleshy bands, terminating in very strong cords called tendons or sinews. These tendons are fastened to the bones and move them as levers are moved. They can be stretched or contracted at will, to permit the various movements of the joint.

In a healthy person these ligaments are very strong and can prevent injury to the joint they protect from any ordinary force. They must be greatly stretched, torn or bruised before the joint can be drawn out of place. On the contrary, in persons who are weak, whose flesh is very soft, as in those recovering from a severe illness, they give way more readily and permit dislocation of the joint. In children these ligaments are soft and yield to slight force. A very common accident, which conveys a moral, happened to the child of a certain Mrs. B——. She was out shopping with her little girl of three; passing over a muddy crossing she lifted the child over by one hand; the little one screamed and writhed with pain; it was found that the mother had pulled the arm out of joint at the shoulder. This accident is very troublesome, because for a long time afterward the arm will slip out of joint much easier than at first. We once met a man whose right arm was useless, because the shoulder joint had been dislocated so often; the arm bone would slip out by its own weight, and he was obliged to carry the arm in a sling all the time.

The hip joint is like the shoulder, a ball and socket joint, with this difference—there is a short, strong band inside the capsule, which is connected at one end with the ball, at the other with the socket, to make the joint stronger. This is a most fortunate provision, because the hip joints must bear the whole weight of the body as well as of the clothing, which is often considerable; if not very strong, they could not safely bear the additional strain which they receive from jumps, falls or in wrestling, lifting heavy weights, climbing, or wielding heavy tools. When they become diseased they are very difficult to cure, because the body cannot be moved without moving them. Delicate children, especially those suffering from rickets or scrofula, are often seriously injured by blows or falls on the hips, which would not attract attention in stronger constitutions. As an example of what an apparently slight injury has done in such a case, the following is related, which occurred many years ago: A boy, about ten years of age, was perched upon a window sill at the school-house at noon time; the children at play pushed him out of the open window, he fell only five or six feet, striking on the frozen ground, bruising one hip. He cried some about it, but remained in school during the afternoon and walked home without help. In the morning he was unable to leave his bed. It was nearly six months before he could leave his room, and when he did so it was with a deformed hip and shortened leg, which have compelled him to walk with crutches ever since. Children have been known to have hip disease from sitting on damp grass; also from kicks and blows.

The knee joint is protected by a flat bone called the knee cap; women who kneel to scrub floors and stone steps are liable to have inflamed knee caps. These cause considerable suffering and endanger the joint, because if the inflammation should spread to it, the "joint water" would be dried up and the knees become stiff. The trouble may be prevented by binding on the knees a soft pad made with a hole in the center for the knee cap to drop into when kneeling. The ankle joint suffers more frequently from sprain than any other. A severe sprain not only draws apart some of the fibers of the muscles covering this joint, but damages the capsule, which quickly resents harsh treatment by pain, and is only quieted by long rest. Surgeons consider a bad sprain a much more serious affair than a broken bone, for it is more difficult to cure. Scrofulous persons cannot be too careful to adopt proper treatment immediately to avert the danger of "white swelling"

following a sprain. The first thing to be done is to give the joint perfect rest until the pain disappears; this can only be done by bandaging the limb to prevent all motion of the joint. After the pain is lessened, it is best to begin exercising it gently to prevent loss of motion. A good liniment kneaded into the flesh around the joint is sometimes an important aid to recovery. A liniment especially good in sprains is called "Uncle Sam's Nerve and Bone Liniment;" it takes out the soreness and stimulates circulation. The reader is referred to the page where bandaging is illustrated for the method of protecting the joint from motion.

The Skull.—The skull is a box of bone, arched on top to make it strong. The heavy loads which some people carry balanced on their heads show how strong it is. It needs to be strong, because it incloses and protects our most precious possessions. The delicate brain, the home of thought, reason, and all that makes man differ from the beast, lies beneath this arched dome. The eyes with which we see are placed in front, our ears in the side; nose and mouth also are in the same bony box, which holds the senses of sight, hearing, taste and smell.

The skull is not made of one piece of bone; on the top it is formed of several thin plates with toothed edges, which fit together as two saws would do were the teeth of one laid in the notches of the other. This union shows most plainly in a baby's skull, which is gristly for some time, with the bones loosely joined together. It also has a hole in the top through which the brain may be felt. A new-born babe has a very soft, imperfect brain, only developed enough to enable it to eat, sleep, cry and see a little. It grows some every day, and by the time it is a year old the brain, is twice as large as when it was born. The bones grow also, and the open space in the top is slowly filled up. There are several reasons for the soft skull: one is to give room for the brain to grow; another, to protect the child from injury, because it is certain to receive many falls and blows before it learns to walk firmly. The intelligent child is always active, but its judgment being slowly developed, it needs many safeguards to carry it safely through all the perils which its activity brings upon it. There is something in the old saying that "if a child doesn't fall out of bed before he is a year old he will be a fool." It is not that falling out of bed makes any difference, but the foolish or idiotic child will stay where it is placed, and is in no danger of falling out of bed or getting into mischief of any kind; so, dear mothers, have patience with the little mischief makers and thank

heaven that they are capable of getting into mischief, for a mother is never more unfortunate than when her child proves to have a defective brain. To return to our subject, some Indian tribes flatten the foreheads of infants by pressing the skull into the shape they admire, keeping it bound tightly, and in time the skull hardens into that shape. Some ignorant mothers try to press the bones of baby's head together to make it close up. It should be let alone; when nature has shaped the brain properly the bones will grow over the space, provided the child is well, and if it is not it should have a doctor's attention. Blows upon the top of the head are dangerous; they may destroy sight and memory. A box on the ear has often destroyed hearing. Striking animals on the head is very cruel, for it only makes them stupid.

The skull is inclosed in a covering consisting of three layers; the outside one is the scalp, on which the hair grows; under it is a layer of muscles which can move the scalp a little; below these is a membrane which grows closely to the bone. Beneath the skull is a very tough membrane to protect the brain in case the skull is broken; below this is a thin, smooth, moist membrane, and again under this is another membrane which grows fast to the brain and is little more than a net work of blood vessels which feed the brain; between this last membrane and the one over it there is always a little fluid similar to the "joint water," which keeps the membranes moist, making a soft packing between the delicate brain and the skull. There is a disease rather common among scrofulous and rickety children which greatly increases the amount of this fluid; the skull will grow to an enormous size, especially the whole top of the head above the eyes. This disease is *hydrocephalus* which means "water in the head." It nearly always causes death; in a few cases children have recovered, but are always left with weak or defective minds; it is very rare indeed that one wholly recovers to be as bright as before it had this disease. Some ignorant nurses think if a baby's head be washed before the skull has closed up at the top the water will leak through and give it water on the brain. It is impossible, of course, for water to run through the three layers outside and the three inside the skull and reach the brain. There is no danger of that, but there is danger that the head will become hot and the brain feverish when it is not kept clean and cool. The scalp needs soap and water more than any other part of the body, because there is a great amount of oily matter oozing from it to make the hair grow. The dirt and dust floating in our rooms mix with this oily matter, making

a black paste which closes up the pores. The sweat carries off the heat through the pores; if these be sealed up the head will grow hot. A baby has no hair because its head needs to be kept cool.

The Jaw Bones.—The bone forming the upper jaw is closely joined with the skull and is immovable. The lower jaw bone is the largest and strongest bone of the face, and is connected with the skull, forming a movable joint which may be felt in front of the ear, and a little lower than the cheek bones. Some people who have weak muscles are troubled by the lower jaw slipping out of joint, which prevents closing the mouth.

Treatment of Dislocated Jaw.—If it be out of joint on one side only, the chin will turn to the opposite side; if on both sides, the chin will be in the center with the jaw dropped, and the patient cannot close the mouth. *To replace it.*—Wrap the thumbs in a napkin, place them on the upper surface of the back teeth, press down and backward, steadily, gently, but firmly, at the same time raising the chin with the little fingers. The jaw will slip into place with a snap; look out for the fingers when this happens. The patient must live on soup for some days, and tie up the jaw with a handkerchief fastened on the top of the head. After the jaw has been once dislocated, it is liable to occur again, and the face should be held while yawning or chewing hard substances.

The Spine.—The backbone, or spine, is placed in the middle line of the body. It is formed of 26 small bones of irregular shape, called vertebræ. Some idea of their shape and the way in which they are joined together may be formed by examining the backbone of a fish, although they are very unlike in many respects. Between each pair of these bones there is placed an elastic cushion made of cartilage, or gristle, as it is more commonly called. These cushions permit the bones to move forward, backward and sidewise, making the body far more supple than if the backbone were one solid piece. Like other springs, they wear and weaken with use, but unlike all other springs of which we ever heard, they possess the remarkable power of recovering their elasticity by rest. A man who walks much during the day, who carries heavy weights, or engages in very active labor or exercise, is shorter at night than he is in the morning, because these cushions are flattened down and made thinner from the pressure which the weight of the body brings to bear upon them, just as a pillow is flat-

tened by the weight of the head during sleep. There is reported a case where a young man who measured usually 5 feet 9 inches, after dancing all night at a ball only measured 5 feet, $7\frac{1}{2}$ inches. A drafted man, of exactly regulation height, walked all night before his examination, and the result was that he was found too short to pass. We will see, as we go on, that every part of the body must have exercise or it gets out of order. Nature is not wasteful, and if she gives us any gift that we do not put to some good purpose, she takes it away. These cushions lose their elasticity when the body is kept steadily in one position much of the time, so that they are not frequently used, making the back stiff or bent in an unnatural shape. Children at school who sit all day stooping over their desks, flatten the front edge of these pads, making them wedge-shaped, with the thin edge to the front; they sometimes harden in this shape, making the pupils round-shouldered; this narrows the chest and prevents the growth of the lungs. We must not forget to describe the way the head and backbone are united. The first vertebra, or bone of the spine, is fastened firmly to the skull by ligaments. The lower part of this vertebra is a stout, bony ring. On the upper surface of the second vertebra is a large pivot which projects upward into the bony ring above, in which it plays freely. This allows the head to turn half around on its axis, to bend forward or backward. These two bones are joined more loosely than any other part of the spine. They are held together by the strong muscles of the neck; but all muscles are elastic and can stretch out longer than usual when any extra strain comes upon them. If the body be lifted by the head, the ring slips up quite to the top of the tooth or pivot, and if at this instant the body be moved violently, the tooth may slip out of the ring and produce sudden death. Never allow any one to lift a child by the head; its struggles to escape may kill it instantly; this has actually happened more than once. It is the way death comes from hanging, when the neck is said to be broken. Rabbits are very easily killed by pulling the head in one direction and the tail in another. It is wonderful how boys will play with death, yet so generally escape. The game of somersault is most dangerous; the head is placed on the ground as a point of support to the whole body, which passes over it. A false movement may throw this pivot out of its ring, in which case the boy would turn over a corpse. The spinal column has another purpose to serve than that of joining the head to the body, and supporting the latter in an erect position. Through the center of each

bone composing it, and of the pads between, there is a hole or cavity, making a canal from the brain to the lower end of the spine. This canal is filled with a substance which looks like the brain, and is really a prolongation of the brain itself; it is called the spinal cord. This is a very delicate and important substance, and is carefully guarded from injury by the stout, bony wall around it. The pressure upon it of the tooth or pivot of the second vertebra, when it slips out of its ring, is the cause of the sudden death that follows. It happens sometimes that the pivot in slipping out of joint does not press on the spinal cord, and in that case a broken neck can be cured.

It is related that Wesley was once passing along a country road, when he was called into a house where a group of people were surrounding a man lying with his head bent over one shoulder. They asked him to pray with the man, because his neck was broken and he must die. Wesley passed around to the man's head, grasping it firmly, he pulled it away from the body with all his might, then, still drawing upon it, he gently carried it around, until the head was on a straight line with the body, let go, and the pivot slipped back into its socket with a distinct snap, and the man was all right. The prayer that followed, it is needless to say, was one of thanksgiving for the living, rather than intercession for the dying.

Another instance, which occurred only a few years ago, did not terminate so happily. A lawyer of great local reputation was summoned to an adjacent county to attend a suit. As he was leaving the court yard some sound attracted his attention; turning his head to see what it was, a hard snowball struck his neck, slipping it out of joint. He walked on to his hotel, sent for a surgeon; the latter feared to make an attempt to replace the bone lest he kill his patient in the trial. Dinner was eaten, and with his head still turned over one shoulder the lawyer returned to the court house and completed his business there, afterward riding home on the cars. Ten days later a sudden jar or movement of some kind slipped the pivot upon the spinal cord, and he expired instantly. A violent shaking may seriously injure the spinal cord of a little child. Indeed, when we consider the delicate structure and incomplete state of the body in childhood, we must conclude that it was not made for a foot ball, to be kicked or knocked around, as children sometimes are. Severe blows upon any part of the body are always dangerous, and should never be permitted, either in the family or the school room.

The Ribs.—These are elastic arches of bone, forming the walls of the chest, which protect the organs within from external injury. There are twelve on each side, and all are joined to the spine at one end. The seven upper ones are also connected in front with the breast bone; the three next are shorter, and the front ends are connected by cartilage or gristle; the two remaining ones are free in front. There are spaces between them filled in with muscle, as may be seen by examining the ribs of an animal. The ribs are arranged so that when the lungs are filled with air they rise upward, to make room in the chest, and as the air is breathed out they fall, to diminish the size and help press the air out of the lungs. This mechanism, if understood, will make plain the plan of “Artificial Respiration,” which will be fully explained in another place, and which is such an important aid in saving life under many emergencies that every man, woman and child ought to know how to produce it. An examination of the illustrations will help you to understand it.

Fracture of the ribs in consequence of a fall or a blow causes an aching pain, which becomes sharp or acute on taking a deep breath. If the injury be followed by spitting of blood, keep the patient very quiet, send for a doctor, and *give no stimulant* while waiting for him. When the chest is bruised, hot cloths or poultices may be applied. Bandage the chest firmly with a strip of flannel 4 or 5 fingers wide, to lessen its movement in breathing, as this motion draws the broken ends of bone apart, increasing the suffering and the injury. If there be an external wound, lose no time in covering with a wet cloth and bandaging; move the patient as little as possible, and keep him lying on the injured side till the doctor comes.

The Scapula, or shoulder blade, covers the back part of the shoulder, and contains the socket in which the large bone of the arm plays. It is constructed of a form best suited to protect the joint from injury, and in the young is partly bone and partly gristle. It does not become wholly bone until nearly the seventeenth year.

The Clavicle, or collar bone, is shaped like an italic letter *f*, and lies across the upper part of the chest just above the first rib. This bone is more slender in women, and of different size and shape than in men; this is the reason that women throw stones or other objects differently; they cannot, let them try as they will, learn to throw like a man. When this bone is broken, the shoulder falls forward and down-

ward, while the broken ends can be easily felt through the skin. This bone is often broken in children, and it is very trying to the child, as well as the mother, to keep the arm and shoulder immovable long enough for the broken ends to knit firmly together. If motion be permitted, an unsightly lump will be left; this is especially dreaded for girls who are expected to grow up to become "society ladies," and appear on party occasions with necks uncovered.

Like every other part of the body, bones are increased in size and strength by use, and weakened by inaction. The bones of laborers are therefore stronger than those of professional men who take little exercise. The tendons or sinews being fastened near the ends of bones, when the bones are actively moved about more blood is carried to those points; this increases the size there; consequently the joints of mechanics, farmers, washerwomen, and all who do hard manual labor, are larger than in people who do lighter work, or none at all.

Those who begin practicing upon the piano while quite young have large joints, for a similar reason. Children should not be put to hard labor before they get their growth, for it stunts them and may produce deformity. The consequences may be seen if a young animal, like a colt, be put to severe and continued labor; the bones become hardened before they grow to full size, and the animal never attains the size it would have done if it had received different treatment. The bones of the lower limbs, in early life, are very soft, and bend when the weight of the body is thrown upon them. Therefore a perfectly healthy child may have bandy legs if urged to walk or stand too soon. Benches and chairs in the school room and at home should be of such a height that the feet can touch the floor. When they are too high, the pupil leans forward, soon becomes tired, restless and unfit for study; the weight of the limbs below the knees may make the flexible thigh bones curved or crooked, the ribs bend inward and lessen the cavity of the chest, and the shoulders become rounded. This is a great misfortune, because a narrow chest confines the lungs in too small a space, producing a feeble constitution, too often ending in early death. Pupils writing or drawing at a desk frequently incline the spine to one side to accommodate the body to the desk. This attitude raises one shoulder, when the desk is higher than the elbow at rest, while the weight of the other arm drags the shoulder down on that side. This, in time, curves the upper spine toward the raised shoulder, while the lower part of the spine becomes curved in the other direction. The spine natu-

rally curves from front to back, but not from side to side. Mothers and teachers should watch children when sewing and studying, or practicing, seated on a piano stool, and have them change their position often; the feebler the child, the more frequently should it change position, so as not to tire out one part sooner than another. A slight curvature of the spine may be corrected by keeping erect when standing or sitting. A good exercise for straightening the spine is to walk about carrying a book balanced upon the head.

Broken bones should always have the attention of a surgeon, when it is possible to procure one. There are three very important things to do to secure perfect union. 1. The ends of the bones must be brought into their natural place, and as near together as possible. 2. They must be held firmly in place by suitable "splints" and bandages, until knit together. These will need readjusting as the swelling goes down. 3. Great care must be used during the "knitting process," and on first beginning to take exercise after the accident, to prevent the limb from becoming shorter or crooked. When a surgeon is called, he is nearly always dismissed as soon as the swelling subsides, and during the most critical time which follows the bone has home care only. This is usually a mistake, and no one who dismisses his surgeon at this stage has any right to charge him with the fault if the limb proves to be deformed on recovery.

After broken bones have united, there will sometimes be trouble for years with pieces of bones working out. This is because the bone was splintered at the time of the accident, some pieces not being entirely separated for a long time; occasionally it is due to disease of the bone itself; in either case the only way to cure it is to have a surgeon cut down to the seat of the injury and scrape out all diseased or broken pieces. As this is done under ether, it causes no pain, and is not a dangerous operation.

What Bones Are Made of.—We have been talking some time of the bones of the body, but have neglected to tell what materials are needed for their repair, or how the work is done. The most important ingredients of bone are lime, gelatine, and phosphorus. These three substances are familiar to us in other forms,—phosphorus being used in making matches; it is also employed frequently as a rat poison. Gelatine is the glue made from boiling bones. Lime is used for whitewash. We get these materials from our food; it is of no use to buy them from

the druggist and expect to make sound bones by swallowing the crude drugs. They must first pass through the laboratory of nature, and be transformed, in some way which we do not fully understand, into a form in which they can be taken up by vegetables; these are eaten by animals, and we, eating both vegetables and animals, receive our supply of lime, gelatine and phosphorus, through them. Medical men have had bones dissolved and given to patients who needed bone-forming material, expecting with the ready-made substance to hasten the work of bone repair, but this plan has proven a failure. We cannot evade labor in that way. There is but one way to make good bones, *to eat* a varied diet, that we may have a supply of every element needed; *to digest* perfectly the food eaten; *to assimilate* what is digested, which means simply this, that after the food is ready prepared to make bone (or any other part of the body) it must be carried where it is needed, and used for the purpose intended. We may eat heartily, yet starve, because the digestive organs fail to do their work; we may eat plenty, digest perfectly, yet starve, because the assimilating apparatus is out of order, and fails to work. It is not always easy to decide where the cause of a given illness is to be sought, and even when found it is frequently very difficult to discover a remedy. It is in such cases that doctors do their hardest work, and no one but a skilled and educated physician is competent to advise for them. Because he sometimes fails, it is no argument against the value, or necessity of his services.

A child of seven should have firm and strong bones, but if he has not been fed on food that contains the right proportion of the necessary materials, he will grow up with crooked legs, weak or deformed frame, and be a poor, miserable creature. There is one food that contains them all, and every child should have it at every meal for the first ten years of life, and that is *milk*. It should not be the only food, do not misunderstand this statement, but it should form a part of every meal. If it could take the place of tea and coffee, which injudicious parents give young children, to their serious injury, it would be a reform in diet which is greatly needed.

CHAPTER II.

THE TEETH—THEIR DEVELOPMENT, CAUSES OF DECAY, AND PRESERVATION.

An examination of a jaw bone will show along the margins, where the teeth have been, a row of deep holes in the bone, which are the sockets in which the teeth grew. A thin layer of bone, no thicker than paste board, extends above the jaw and encircles the tooth. It is fastened in the jaw by a membrane, like that covering the bones elsewhere, which grows fast around the root of the tooth, and also to the inside of the cavity. A specimen of membrane familiar to everybody is that lining an egg shell. A dentist, in taking out a tooth, tears this membrane loose and breaks off the nerve; sometimes pieces of bone come away after the tooth is extracted, and the dentist is charged with breaking the jaw. Instead of the jaw, the loose bit of bone is a piece of the thin layer projecting above the jaw bone, which was broken at the instant the tooth became loose. If any part of it be splintered off, it will work out in time. Sometimes a large piece comes away fastened to the tooth. If this be carefully examined it will be found that the membrane at the point of union has been changed into bone, so that it would be impossible to extract the tooth at all, except by breaking this thin portion of the socket. It is caused by disease of the tooth, and is more commonly found after an abscess has existed some time. The jaw bone itself never breaks when a tooth is extracted, unless it is diseased, and when this is the case the dentist or surgeon is not to blame for the accident.

We are provided by kind Providence with two sets of teeth, and when the permanent set is lost, it is usually our own fault, but no less a misfortune, for no artificial teeth can compare with those of Nature's own providing. The first set are called milk teeth; they begin to appear at about the seventh month and are complete about the end of the second year. There is a great variation in these dates; instances have been known where the front teeth were developed at birth, and again the first tooth will not appear for a year or more. The writer knows a

healthy young lady whose first tooth did not appear until she was eighteen months old. She had not been sick, and having been allowed to eat of the same food as the family, her gums had become very hard from attempting to chew her food. This made the cutting of the teeth difficult, and caused more suffering than usual, but she passed safely through the ordeal, and her second set came at the average age. If a child appears to be healthy, and the teeth fail to come when expected, there is no occasion for alarm. The temporary set contains twenty teeth: four incisors, directly in front, (this name is given them because they are used to cut the food); two eye teeth, or canines, one on each side of the incisors. These were called eye teeth from an old notion that they are connected with the eyes and extracting them injures the eye-sight.

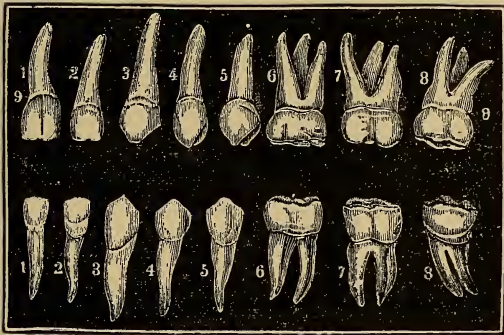


FIG. 2. PERMANENT TEETH.

The upper row represents the teeth of the upper jaw; the others, those of the lower jaw.
 1, 2, Incisors, or Cutting Teeth. 4, 5, Bi-Cuspid. 8, Wisdom Tooth, a Molar.
 3, Canine, or Eye Tooth. 6, 7, Molars or Grinders. 9, Neck of Tooth.

This belief has no foundation in fact; they have no influence whatever over the eyes. The name canine is given them because they correspond with the holding and tearing teeth of dogs. Back of these, on each side, are the two molars, named from a Latin word which means mill, because they grind the food we eat. They are best known as double teeth.

A tooth has three parts: the crown, or the portion to be seen above the gum; the fang, or root, which is embedded in the jaw bone; and the neck, or the part to which the gum adheres. It is made of

ivory and enamel. The inside of the crown is made of ivory, which is tougher, harder and more durable than bone; it has an outside coating of enamel that is extremely hard. A very good idea of the way enamel covers the crown may be gained by examining a piece of a china plate. The fine white enamel is a coating upon the coarser clay of which the plate is made. The root or fang of the tooth and the neck are made wholly of ivory. The enamel is thickest over the surfaces used in cutting and grinding our food; it is worn away very slowly, and when of good material (it then has a yellowish hue), with good care it will outwear an ordinary life. Many women destroy their front teeth by biting off thread; more girls and boys destroy their double teeth by using them for nut crackers. If the enamel be cracked, as it is very likely to be by hard usage, it permits the fluids of the mouth to ooze through to the ivory and set up decay. Small white cords, called nerves, pass from the jaw up through the fang of the tooth; these give warning when the tooth is in danger, causing that common malady which can conquer the bravest spirit—namely, toothache.

The permanent set begins to appear during the sixth year. The new tooth grows outward, and pressing against the root of the milk tooth, the latter slowly disappears to make room for the new comer, until, when ready to push through the gum, the first tooth is held in place merely by the edge of the gum, and can be easily pulled out by a thread tied about it. The jaw has grown larger by the time the temporary teeth begin to come, and more teeth are needed to fill the space ready for them, therefore there are thirty-two permanent ones: four incisors, two canine, four bi-cuspids, and six molars in each jaw. This set is complete about the thirteenth year, with the exception of the third molar, or wisdom tooth, which is delayed until the twentieth to the thirtieth year, and sometimes later. Occasionally it never appears at all.

The first permanent tooth is the sixth year molar. At that age there is room back of the temporary set for one more tooth, and this one comes to stay. It is apt to be neglected if it begins to decay, because it is thought to be a milk tooth; but this is a great mistake, and it is outrageous to have it pulled; it is just as large and its roots just as long at seven as at forty. Of the permanent set, the incisors, cuspids and bi-cuspids, each have one root. The molars of the upper jaw have three, and of the lower jaw two roots. The illustration shows their form. The teeth divide and prepare our food for the stomach. They

enable us to speak distinctly; when they are lost the jaw grows smaller, the cheeks and lips fall in, altering the appearance of the face. Owing to the small importance which the public places upon preserving the teeth, we have given considerable space to this subject, which has more to do with the state of the health than is generally believed. The care of the teeth is as important as the care of any other part of the body, and children should be taught to clean them as regularly as they wash their faces (it takes but a moment, and is the only way to keep them sound and free from decay).

Care of the Teeth.—Cleanliness is the best tooth preserver, soap and water the best dentifrice when the mouth is healthy. Mothers should clean their children's teeth daily until they are old enough to do it themselves. There are three points to be looked after—the grinding surface, between them, and at the margin of the gums. The articles needed are a soft brush (be very particular that the bristles are

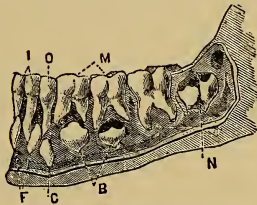


FIG. 3. TEMPORARY TEETH.

- | | |
|----------------------|-------------------------|
| I. Incisors. | F. Permanent Incisors. |
| D. Eye-tooth. | C. Permanent Eye-tooth. |
| M. Molars. | B. Permanent Bi-cuspid. |
| S. Sixth-year Molar. | N. Wisdom-Tooth. |

not loose), floss silk and a good pure soap. Not all toilet soap is fit to use in the mouth; the more highly perfumed it is, the more reason to suspect its purity; because, by aid of chemicals, the most fœtid odors of grease are transformed into a strong odor resembling certain perfumes. The offal of slaughter houses, animals dead from disease, and other refuse of even more disgusting nature, are worked up into choice toilet soaps, and are liable to contain the germs of disease. There is a soap in the market prepared of pure and healthful materials, expressly for the teeth. Its name is Dr. Ennis' Fragrant Antiseptic Tooth Soap, and it may be had of any druggist. It not only acts as a soap, but it contains materials which harden the gums and

counteracts the effects of unhealthy saliva, being antiseptic, as well as cleansing. The floss silk is employed to remove particles of food from between the teeth. Medicines are responsible for many spoiled teeth. Tincture of iron is an excellent remedy, which cannot be dispensed with, but it is very destructive to the teeth. The mouth should be rinsed immediately after each dose, with water, to which a pinch of bicarbonate of soda or saleratus has been added. A better way is to take this medicine through a straw or a glass tube. It should always be given with a large quantity of water, to prevent injury to the stomach. Mercury is another drug which destroys many teeth; it does this by affecting the gums, making them spongy and loose, so that fluids or food is left to ferment around the soft neck of the tooth, which is more easily damaged than the parts covered by enamel. Anything which sets the teeth on edge is very injurious to them. Lemons, tooth washes containing acids, and pickles, soften the enamel and start decay. The following reasons for giving better care to the temporary teeth than is now customary, are worthy of your consideration:

1. A cavity in a tooth makes a nest for germs of fermentation. These pass into the mouth and are swallowed. There is no more poisonous matter in nature than decayed bone. The matter scraped out of a foul, decayed tooth and injected into the veins of a dog will destroy the animal very soon, which shows its deadly nature. This matter mingles with the food; it is in very small quantity, it is true, but all physicians of experience agree that a single unsound tooth may furnish enough poison to seriously impair the health. The chapter on *germs* will make more clear the dangers that threaten from this source.

2. A diseased milk tooth often causes decay in the one which takes its place; the permanent tooth sometimes having a hole in it when it pushes through the gum.

3. If a nerve be exposed, as will occur after a time, toothache is produced by the slightest cold. Toothache in an adult, who is supposed to be somewhat hardened to suffering, will destroy the good nature, the comfort, the rest and patience of the most forbearing. Imagine, if you can, its effect upon the more delicate organism of the child.

4. Soreness of a tooth, caused by decay, makes the child afraid to bite upon it; hence the habit of bolting the food is acquired, a habit that is certain to produce dyspepsia later in life.

5. A bit of apple core buried in a decayed tooth has been known to produce an abscess, from which the pus burrowed through the cheek, leaving a large, ugly scar on the face.

6. The temporary teeth are necessary to preserve the form of the jaw. They support each other, and if one be taken out the ones on either side are pressed together after a time. The jaw is apt to be shortened upon that side. This makes the face one-sided, or irregular in outline, while the permanent tooth, which should occupy the space, is pushed out of place, and grows as a tusk outside or inside the gum.

Children whose teeth are irregular may have a great deal done for them at the present day, not only in correcting irregularities, but in improving the symmetry of the jaw. It requires patience and time, therefore it is best to postpone this treatment until about the twelfth year, when they can understand the necessity of having it done.

It will pay to have a tooth filled which is expected to last only a year or two. When the milk tooth is not loose as the new one begins to come through, it must be removed at once. If the jaw be too short, so that the teeth are too much crowded together, it is best to remove one to prevent the set from being irregular and unsightly. Parents can do much, aided by a good dentist, to give their children a regular and beautiful set of sound teeth. The trouble at present is that they are not cared for early enough.

There are many serious disorders in both children and grown people, produced by decayed teeth, that frequently deceive not only the victim, but his physician as well. St. Vitus' Dance has in a few instances been cured by cleansing and filling a decayed tooth. Convulsions occurring at intervals have resisted all treatment until the mouth was freed from unsound teeth. A gumboil is an opening to discharge pus from an abscess connected with the root of a tooth with a putrefying pulp. These are often seen in children's mouths. The pus mingles with the food, is swallowed, and produces one form of blood poisoning. Eye and ear diseases sometimes last a long time before it is discovered that the origin of the disease is located in the mouth. A middle aged lady, otherwise perfectly healthy, suffered for several years with attacks of intense, agonizing pain in the right side of the head. After nearly a week of suffering a small abscess in the right ear would discharge matter. This was a signal for cessation of pain. In a short time the abscess was healed, and she had no reminder

of her trouble for several weeks at a time. Having occasion to consult a dentist for a broken tooth, he discovered, in the right upper jaw, an old root, over which the gum had closed. A tooth had been extracted and one root left behind, unknown to her. At her request he removed it; attached to it was a little sac, which contained pus. It was not for a long time suspected that this had anything to do with her ear trouble, but as years passed on and she never had another abscess form in her ear it seems certain that her previous attacks of pain were caused by this old root.

An interesting case has been reported by a surgeon of a patient who came to him to have an eye removed. It was sightless, and around it was an abscess. The surgeon, finding decayed teeth in his mouth, persuaded him to wait and see what treatment of the teeth could do for him. On taking the teeth out, one large double one had a cavity in the root. In this was sticking a piece of wooden toothpick that had been pushed clear through the root and was broken off. This started the eye disease, and its removal produced so favorable an effect that the eye was saved. A patient troubled with a foetid discharge from the right nostril, with heat and feeling of pressure in the same side of the jaw, was cured by extracting some decayed teeth on that side. Another case had a large tumor of the cheek; the nose was crowded around to the opposite side and the nostrils closed, the trouble being caused by some old roots. Recovery quickly followed their extraction. The irritation occasioned by a diseased tooth may lead to the formation of a bony tumor on the root, which, pressing on a nerve, may cause other diseases than abscesses. A lady suffered from severe neuralgia, affecting the left eyeball; also the left side of head and face. The extraction of a tooth relieved her. This tooth had an enlarged root, which pressed on the nerve. Another, after being a martyr to neuralgia of the face for some time, had a sound tooth, which was loose and elongated, removed. A tiny bony tumor on the end of the root had caused both the lengthening of the tooth and the neuralgia. A young woman with a wry neck, which had lasted six months, and which drew the head nearly down to the shoulders, was cured by the removal of a tooth. Pressure on a nerve at any point, if long continued, will produce neuralgia. A lady suffered a long time with neuralgia of the left forearm before it was discovered that a badly fitted set of artificial teeth was the cause.

Epilepsy, catalepsy, blindness, deafness, lock-jaw, convulsions

and St. Vitus' Dance are some of the diseases which may be produced by diseased or crowded teeth.

The causes of decay may be included in the following list:

1. Inherited peculiarities, which affect the shape, softness and thickness of enamel. The chalky white teeth are brittle and decay early. The teeth of the upper and lower jaw may strike together in a way which makes them wear out more rapidly than usual. The enamel may be thin in spots, or minute fissures may remain where it has not been developed, as the teeth grew larger.

2. Fractures of the enamel from biting off threads, cracking nuts, picking with metal toothpicks, crowding of the teeth together in the jaw, (which makes friction between them,) eating very hard candy, biting suddenly upon a hard substance (as when eating cherry pie which contains the pits) and any accident which subjects a tooth to a sudden blow.

3. Roughening, or scouring away the enamel by a gritty tooth paste. For this reason powdered charcoal should not be used for a tooth powder. Washes which contain acids to whiten the teeth, eating lemons, and strong vinegar, especially that which is made from sulphuric acid, destroy the enamel.

4. Swelled gums. Old decaying roots make them swell; so do particles of food which lodge between the gum and a tooth, and an unhealthy stomach which is accompanied by great acidity. The inflamed gums bleed and are painful when brushed; therefore the mouth is not well cleansed. Tartar accumulating about the neck of a tooth is the most frequent cause of swollen gums.

5. Medicines which destroy the enamel. Tincture of iron, mercury and other drugs which are either very sour or affect the gums, belong to this class, as already described. A young lady of 17, with sound teeth, contracted diphtheria; her throat was treated with a strong solution of tincture of iron, among other remedies, with no precaution in protecting the teeth. They were blackened, the enamel softened, and decay progressed so rapidly that a year after her recovery she was obliged to have every tooth extracted and have complete upper and lower sets of artificial teeth. Another lady of twenty lost a fine set of teeth in consequence of disease of the gums, caused by taking calomel, which produced salivation.

6. Lack of cleanliness is the cause of the greater part of decay in teeth. Particles of food left in the mouth after a meal are kept

warm and moist; they soon ferment, exactly as does the swill in a barrel exposed to the sun; they sour, and soften the enamel at the points to which they adhere. The time to attend to decaying teeth is when the first speck is discovered in the enamel. It should be filled immediately, because decay can be easily checked then and the expense is small. If the patient be a child with a temporary set, the filling should be of some soft material, as gutta percha, tin or some material which does not hurt as much as a gold filling. Grown people should not have teeth extracted simply because they ache. The nerve around the tooth may be diseased while the tooth is sound; in that case taking out a tooth will not relieve the pain. Neuralgia of the face sometimes produces toothache in sound teeth. A lady was kept awake two nights with excruciating pain, which appeared to be located in a certain tooth in the left side of the jaw. She called in a dentist to extract it, but he found it perfectly sound and tried to persuade her to save the tooth; but she refused and commanded him to do as she wished. He extracted the tooth, but there was no relief of pain. In an hour or two she sent for him again and insisted upon having an adjoining tooth taken out; he reluctantly obeyed, and she urged him to wait a little to see if the pain was allayed, but half an hour later, the suffering being as severe as before, she was determined to have a third one taken out, which was done. This gave no more relief than the others, and the dentist refused to take out any more. The next morning the gum around a tooth in the opposite side of the mouth was swollen and painful; that tooth was extracted (the root was found ulcerated), the pain ceased. As an example of the ingratitude a person engaged in trying to relieve suffering occasionally meets with, it may be added that this woman actually tried to obtain damages from the dentist for the loss of her sound teeth. She failed, as she deserved to. Tobacco chewing is an enemy to the teeth. It wears them away, and turns them yellow.

Tartar is a yellowish crust which collects on the teeth at the edge of the gums. It gradually separates the gum from the tooth, which exposes the neck of the tooth to all fluids in the mouth. The neck, not being protected by enamel, is more easily destroyed than the crown and begins to decay when the gum is separated. Tartar should be scraped off by a dentist and the surface beneath polished. Afterward, occasionally scouring the teeth will keep the tartar off. The

ashes of a cigar make a safe tooth-powder. Ennis' tooth-soap will heal the gums and cause them to adhere to the neck of the teeth.

Toothache.—There are many prescriptions for allaying pain in the teeth. Sometimes one will succeed, sometimes another. As soon as the pain has ceased the tooth should be treated, and filled, if decayed. The first thing to do is to rinse the mouth thoroughly with water containing bi-carbonate of soda, as much as the water will dissolve. Use the water hot or cold, as is most agreeable. Take a small bit of cotton batting or lint, dip it in the medicine selected, and place it in or on the decayed spot; cover it immediately with a larger piece of dry cotton or lint and shut the teeth, to hold it in place. *Never take toothache medicine in the mouth.* Anything strong enough to quiet the pain is either poisonous or will make the mouth sore. Never go to sleep with such medicine on a tooth, unless it can be packed in a cavity so firm that there is no danger of it being swallowed.

Toothache Remedies. No. 1.—Oil of cloves, one fluid drachm; sweet spirits of nitre, one fluid drachm; acetate morphia, 2 grs; mix and apply as above directed. *This is poisonous, and must not be swallowed.*

No. 2.—Sulphuric ether, one-half fluid ounce; pulverized camphor, one drachm; pulverized alum, one drachm; sulphate morphine, one grain. Dry the cavity and apply on cotton. *Do not swallow this.*

No. 3.—Dip a bit of cotton in pure creosote, crystallized carbolic acid, oil of cloves, laudanum or chloroform, and pack in the tooth. *None of these should be allowed to touch the mouth.*

To Apply Toothache Remedies.—Fasten the lint or cotton to the end of a knitting needle or darning needle, carry the medicine to the right place; then, with a second needle, hold the bit of packing in place while the first needle is drawn out.

Toothache may be greatly alleviated by a warm foot bath, which draws the blood away from the gums. If the latter are very much swollen prick or lance them to let the blood flow. This will sometimes give immediate relief. A cathartic to make the bowels move actively lessens the blood in the gum, and is especially useful when the toothache lasts for several days.

Inflamed gums.—The following cooling mouth wash is very soothing: Take chlorate of potash, one part; water, sixteen parts; let the potash dissolve. Swallow one teaspoonful of this mixture every hour, and between doses take a mouthful occasionally, holding it a minute, then

spitting it out. If the gum swells and there is throbbing pain, which is a sign that pus or matter is forming, poultice the gum with a roasted fig or raisin, but *never poultice the face over a swollen gum*; to do so is to draw the pus to the surface through the cheek, leaving a disfiguring scar.

Inflamed, spongy or ulcerated gums.—1. Take borax, two scruples; honey, one fluid ounce; sage tea, four fluid ounces; mix and shake till the borax is dissolved. Rinse the mouth frequently.

2. Another prescription which sometimes succeeds when the first one fails, is this : Powdered nutgalls, two drachms ; powdered Peruvian bark, two drachms; powdered orris root, one drachm; infusion of roses, four fluid ounces. Mix; let it stand a day or two, then strain. Use it the same as No. 1.

Mouth-wash for foetid breath and inflamed or ulcerated gums.—Tincture of rhatany, three fluid ounces; cologne water, six fluid ounces; carbolic acid, 95 per cent., one-half fluid drachm; oil wintergreen, ten drops. Mix and apply to the gums with a soft brush after each meal and at bed time.

Tooth-powder.—Mix together equal parts of prepared chalk, powdered orris root and scrapings of castile soap.

Tooth-soap.—Ennis' fragrant antiseptic tooth-soap is the best article of the kind, without exception, for cleansing and purifying the mouth and teeth.

To stop bleeding after extracting a tooth.—Ordinarily the bleeding will stop in a few moments without any special attention. Cold water held in the mouth or salt placed in the socket from which the tooth was taken, will be the only measures needed except in cases which belong to the class called "bleeders." There are some families whose members bleed dangerously from the slightest scratch or cut. Such people run a great risk in having a tooth taken out; others bleed less easily from slight injuries, and are not aware of this peculiarity in their own case until a tooth is extracted. It is always advisable in these cases to call a doctor, because so much blood is usually lost before the flow is permanently checked, they need medical advice to recover their strength. In some instances bleeding ceases soon after extraction, but several hours later when the patient is sleeping it begins again; before a doctor is found and the blood flow stopped, the strength is so much reduced as to cause great anxiety as to recovery. The following may be tried till the doctor comes: Make a roll of cob-

web large enough to fill the cavity, pack it in firmly with a knitting needle, hair pin or anything handy. Pack above this wads of cotton batting, until the space is so filled that the tooth above or below it will press hard against it when the mouth is closed. Fasten the jaws firmly together by a handkerchief tied on top of the head. Instead of the cobweb, a wad of cotton dipped in any of the following substances that can be had, may be used: Solution of persulphate of iron, nut-galls, pulverized alum or tannin. Whatever is used, keep it in place until all bleeding has stopped, and do not remove the part packed in the socket for twenty-four hours.

CHAPTER III.

THE OUTER WALLS OF OUR HOUSE.—THE MUSCLES, THE SKIN
AND ITS CARE.—CLOTHING.

Having examined the frame-work of our house, the next structures to claim our attention are those which inclose it, and conceal it from view. The bones are held together and covered by flesh which is made up of muscle, fat and a substance which binds the muscles together, called sometimes *cellular*, sometimes *areolar* tissue. This is in the form of a thin, glistening membrane—the same the butcher draws over the carcass of a sheep to make it look tempting. A peculiarity of this membrane is that it allows air or fluids to pass through it very readily. It can be blown up so as to increase the size of the body enormously. Butchers have been accused of inflating meat in this way to make it look fat. It is reported that the cunning Oriental when he has a particularly lean and bony camel to dispose of, and his customer belongs to the less astute European or American race, inserts a quill between the muscles in the side of the animal's neck, and blows it up until it looks plump; this makes it uncomfortable and uneasy; its efforts to rid itself of the burden are called signs of spirit or vigor by its owner. The innocent purchaser is astounded on seeing the animal the next morning to find it scarcely more than a bag of bones. A wound in the chest or at the root of the neck, which allows air to reach the cellular tissue, is a very serious matter. Every breath taken into the lungs, at the same time draws air into this tissue, and the whole body will puff up so as to almost, if not quite, cut off breathing for want of room for the lungs to expand. Such a wound must be immediately covered by a thick pad of many layers of cloth, or, when the accident occurs in the fields, a handkerchief filled with grass or clay must be pressed into the wound to close it completely, and bound securely there. It must not be removed, even for examining the wound until a surgeon arrives.

The cellular tissue not only binds fat and muscles together, but it contains a fluid which moistens the muscles so that they glide over each other without friction. In certain diseased states this fluid is enormously increased; this is the condition known as dropsy. The disease

which gives rise to this accumulation may be located in the heart, the kidneys, the liver, or in the nervous system. Muscles are bundles of flesh plaited over the bone, and their structure may be seen by examining a piece of boiled beef. Each muscle is a band formed of numerous fibres or threads, which, during life, are elastic like india rubber. Each end of the longer ones is fastened to a bone by a stout white cord, called a sinew. Every muscle has an antagonist; that is, one which acts in opposition to it. For example, the arm is bent at the elbow by the contraction of a certain muscle. As this draws up its opponent is stretched out. These act according to our will; therefore, when we have no further need of a bended arm, the muscle which drew it up relaxes. The one on the stretch now contracts, and the arm is brought back to the straight position, where it is held by the opposing muscles. When a bone is broken it is drawn apart by them, and the most difficult part of treating broken bones is to restrain the action of the muscles upon them after they are set. For this reason they are firmly bandaged, after being fastened between stiff, unyielding supports, or splints, so that the muscles cannot move them. All our motions are produced by the contraction and relaxation of muscles; the more we exercise them, the stronger and tougher they become. In some countries messages are carried by runners, the muscles of whose legs become like whip cords. The effect of not using them enough is to make them soft and weak. We have proof of this in the state of a limb that has been bandaged a long time to allow a broken bone to unite. The muscles are wasted, and their natural strength is regained slowly, and is not completely restored until the bone is firm enough to be used like its mate. Persons who have been confined to their beds a long time with sickness arise with weak muscles. Should they attempt to do the hard work to which they were accustomed in health, to take long walks, or lift heavy objects, they are liable to do themselves lasting injury. Mothers especially need to be cautioned against lifting their children while they are recovering from an illness that has greatly weakened them. Exercise according to present strength is the only safe rule to follow. It must not be measured by what one can do when perfectly well, nor must one person be guided by what another does in the matter of exercise. Ambitious women who do their own housework often injure themselves in trying to keep up with others. It may not be agreeable to see the neighbor's washing on the line early Monday morning, before one is half done with her own, yet it is better

that the washing be delayed until the next day, or still later in the week, than that the woman upon whom the comfort of the family depends be overworked or disabled for the empty glory of excelling her neighbor.

The spine is held erect by a very strong muscle passing down the back, braced by others passing from the spine to the ribs. Lack of suitable exercise weakens these muscles. In children the same thing follows from dyspepsia or unsuitable diet. The spine is not properly held in place; it becomes bent, twisted, or distorted, making a hunch-back. Walking, playing active games, and every kind of labor which moves all parts of the body, strengthen these muscles. Those who sit most of the time, who walk little and slowly, all who lead inactive lives, have weak backs. Such people frequently sprain their back, producing a lasting injury by sudden violent exertion, to which they are not accustomed. A lady who had never done any hard work in her life, and very little of any kind, saw a lamp overturned. Fearing the house would burn, she ran down a short flight of stairs to the kitchen, caught up a large pailful of water, ran up and extinguished the flames, then fainted from the exertion. She injured her spine by this act so severely that it was several years before she recovered sufficiently to walk about the room. Those who walk erect can walk farther without fatigue than those who stoop. Children should be taught to stand erect. Their shoes should be frequently examined, to see that the heels are the same height, and if one be knocked off it should be immediately replaced. A small difference in the height of a heel, or thickness of a sole, the habit of standing or sitting on one foot, or any practice which keeps the soles of the feet or the hips at different heights long at once, will lead to curvature of the spine, or hip disease, in some constitutions. The reason is, that the muscles on one half the body have extra weight thrown upon them, they gradually grow stronger than their opponents on the other half, and draw that portion of the body which they control to their own side. Shoulder braces are a poor device at best. They may hold the shoulders up while worn, but as they keep the weak muscles from being used, the shoulders fall forward again when they are removed. The better way to straighten the shoulders is first to ascertain what is making them rounded or crooked. Whatever it may be, it must be remedied, and the muscles trained so as to overcome the unequal strength of opposing sets. It takes more than four hundred muscles to complete the human body.

Every movement calls into play a certain number of them. To acquire perfect control over them requires regular and repeated effort. First trials are feeble and irregular, like those of a child learning to walk. Compare the first specimens of a school boy's writing with his work after he has become an expert penman. It is practice—which means, in this instance, exercise—that has improved his work.

By constantly repeating the same motions they learn to obey the will, and this gives skill. Reading, speaking, singing, the use of tools, all depend upon muscles, and exercise is the only way to make them strong, supple, and obedient. A person whose muscles are well trained will do a certain amount of work with less fatigue than one in whom they are untrained; a clerk, or copyist, will write steadily for ten to twelve hours more easily than one who seldom writes can pen a short letter. Exercise should be regular and frequent; the body needs it as much as it needs food. That form of exercise is best which calls into action the muscles that have been idle. The shoemaker sits all day using the muscles of the upper part of the body; he will be healthier if he takes a certain amount of walking exercise, or engages in games that make him run or jump. The custom among farmers of working extremely hard for several days, then spending a day or two in idleness, is not a good one. It is better to do less in a day and divide the work evenly among a greater number of days.

The best time for out-of-door exercise is in the morning, when the air is pure, and after the ground is dry. It should not be taken immediately after a hearty meal. During exercise all muscles should be free to contract or relax as they will. Tight corsets, or waist bands, or any arrangement of the clothing to hinder the flow of blood through its course are harmful. Pressure on muscles prevents their growth and reduces their size, so that a lady accustomed to a tight corset feels that she cannot do without it, because it seems to her that without its support she "shall fall all to pieces." A woman who sews steadily for many hours exhausts the muscles of the back and right arm; they ache, which means that they are crying for rest and food; they have been used up faster than they are renewed; they are bankrupt for the time being. She will accomplish more to stop sewing before this stage is reached, and do other work that will call into play other groups of muscles while these rest. The wood-cutter saws awhile, then splits; he does this because he has learned he can do more work by changing occasionally. A feeble woman who stands a long time ironing or

making bread and pastry, finds herself, at night, worn out and suffering. She wonders why such work is harder upon her than shopping, visiting, or playing croquet, or other out-door games. One reason is that the housework causes an over-use of certain sets of muscles which bear the strain of standing in one position a long time; another is that pleasant mental occupation, joined with exercise, makes it doubly beneficial. In the latter circumstances change of scene, meeting other people, the pleasurable excitement, all help on the effects of the physical exercise; while the open air, in which part of this exercise is necessarily carried on, is an added reason why a woman can endure more when she goes out from home for a day of pleasure-seeking, or business, than in the routine of "monotonous housework."

Exercise strengthens by carrying more blood to the part, but there is a limit to the benefit to be gained by exercise. A ride or a walk of a mile may do good, when twice as far will produce exhaustion and harm. No matter how small the strength, that must be the measure of exercise which will be safe. *Relaxation must follow contraction*, and it must last as long to allow perfect recuperation. A boy compelled to hold a book out at arm's length as a penalty suffers cruelly. In one case the arm was useless after a protracted punishment of this kind by a brutal teacher. Children at school need frequent intermissions to rest their backs. Over-use of a muscle is followed first by fatigue, next by cramps and, lastly, loss of power. Those who write steadily day after day for years, always holding the pen the same way, are liable to have the disease known as "writer's cramp," or "scrivener's palsy." There are other occupations which produce palsy of a particular group of muscles, such as type-writing, telegraphy, dentistry, etc. The brain power, or that part of it which controls these muscles, fails from exhaustion; it can no longer spur them up to their work. Rest and change of employment are demanded, and are the only hope of recovery. Exercise which leaves one tired and exhausted has been too severe, too long continued, taken in impure air, or taken when rest is needed. When one is exhausted from labor which employed only a part of the muscles, it is a mistake to engage in exercise to strengthen the others until after thoroughly resting and eating. The surplus stock of muscle-power having been used up, a new supply must be laid in before calling on the blood to furnish more to the unused muscles. Those recovering from illness often bring on relapse by exercising improperly. A sick person can sit up longer in a

carriage than in an easy-chair, or a room where he has lain sick. The pure air out of doors makes the difference. Muscles are stronger if exercised in the light; people who live in dark rooms are less vigorous than others, just as plants that grow in the shade are more feeble than those exposed to the light. Kitchens and shops especially should be light, for the sake of those who do the indoor work of the world. It is evident that if we would preserve the power of our muscles we must not over-tax them; but as we go on, it will become more and more apparent that not until "thought shall need no brain, and nearly four hundred organs of motion shall cease to constitute the principal portion of the human body, can we dispense with muscular exertion."

The Skin.—Inclosing the muscles and the bones to which they are attached, and enveloping every part outside of the body, is the tissue familiarly known as the skin. It is made up of two layers. The derma or true skin is tough, flexible and highly elastic, in order to defend the internal parts from violence. This layer contains a network of blood vessels and nerves, also three kinds of glands or bags; a very good idea of one kind of a gland may be formed by examining under a magnifying glass the little spaces in an orange rind in which the oil is formed. A gland, then, is a little sac, bag or tube in which something is made, and these lying in the derma are no exception; for in one set the sweat is formed, in another the hair, and in the last a substance like suet, which keeps the skin soft, oily and flexible. The outside layer of the skin is called the epidermis, or cuticle, also the scarf-skin. This last we are constantly shedding in the form of scales; a snake sheds it all in one piece, and only once a year. If you have seen the skin just cast by a snake, you have a good idea of how the human cuticle would look if shed all at one time. It forms a defensive covering to the surface of the true skin, and limits the evaporation of watery vapor. It has no feeling, and can be scraped or shaved off without pain from thickened places. It varies in thickness on different parts. Where it is exposed to pressure and friction it is thick, hard or horny, as may be seen on the palms of the hands and soles of the feet. Corns are thickened spots of cuticle, produced by friction or pressure. Their treatment will be described elsewhere.

A blister causes a separation between the cuticle and the true skin. If this thin covering be broken so as to let the air in, there is apt to be pain and inflammation; to prevent this, open a blister by running a needle between the cuticle and true skin, beginning half an inch or less

from the edge of the blister, so as to make a passage for the water from it through a little space of sound skin. This way of opening a blister causes no pain whatever.

The color of the skin depends upon the cuticle; the black color of the negro, and the tawny hue of the oriental are due to the presence of pigment in the cuticle.

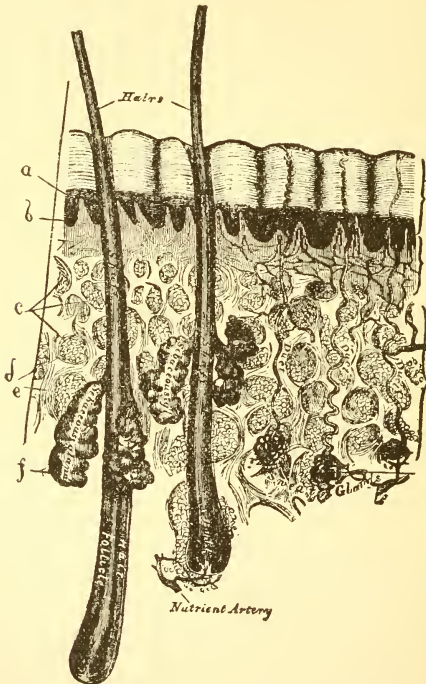


FIG. 4. SECTION OF SKIN GREATLY MAGNIFIED.

- A. Cuticle, or Scarf-skin.
 - a. b. Rete Mucosum, the layer which contains the color.
 - c. d. e. Fat stored in the skin.
 - f. Sebaceous gland which furnishes the suet or oil for the outside of the skin. The oil passes out through the same opening as the hair.
- The sweat glands may be known by the coiled tubes passing up through the cuticle.

Parts that are liable to be injured by dust are covered by a delicate sensitive skin, usually called a membrane—another proof that our body

was designed by an intelligent Creator, and not the offspring of blind chance. Dust would obscure the sight, therefore dust causes pain or irritation; this makes the tears flow, and they wash the dust away. If dust entered the lungs, it would stop the passage of air through the air-cells, and we would die; therefore the membrane lining the tubes leading to the lungs is very sensitive, and a cough or sneeze at once dislodges an intruder: the finer dust that does not excite a cough is removed in another way. The membrane is thickly covered with the finest hairs, which are in constant waving motion in such a direction as to move the dust and mucus upward toward and into the throat.

How the sweat is thrown off.—The sweat glands are in the form of a very minute tube, coiled up in a tiny space, as shown in the illustration, and their business is to separate from the blood some of the water and wastes with which it is loaded. One end of the coil opens on the cuticle, and may be seen through a magnifying glass as a minute hole. These openings are very numerous. Dr. Wilson carefully counted the holes or pores on the palm of the hand, and found that they made $73\frac{1}{2}$ feet of drainage in every square inch of skin. They are not so plenty everywhere; but some one who likes to figure out odd problems has made out that if all the sweat glands could be straightened out and joined, to make one tube, it would be 28 miles long. Each gland is constantly throwing off sweat, but it cannot be seen except when it becomes very profuse. In winter as well as summer, something like two pints ought to be thrown off every twenty-four hours. This amount is greatly increased, when it collects in drops, and rolls off, as happens during violent exercise, or on a very warm summer's day. The sweat, or perspiration, as some people prefer to call it, is a deadly poison, and if a little of it were injected under the skin of a rabbit it would kill the animal very quickly. Anything that our bodies have once used and thrown aside becomes a poison to them, and must be disposed of outside, or the consequences are to be dreaded. The result of sealing up the pores and thus closing up the 28 miles of sewer (which the sweat glands may be called) was demonstrated a great many years ago in Rome. There was to be a grand procession, and a little boy was selected to appear as an angel. His whole body was covered with gold leaf, and a pair of golden wings was fastened upon his shoulders. He looked very lovely, but in a few hours the poor child was seized with convulsions and died. Closing the pores and preventing the escape of the sweat poisoned him to death. There are a great

many people being slowly poisoned by the partial sealing up of their pores through neglect of bathing. The moisture from the sweat glands is made sticky by the material from the sebaceous glands, which make the suet or fatty substance for oiling the skin; the dust from the air settles upon it, making a paste that drying partially seals up the pores. Besides imprisoning a large amount of poisonous matter, this paste offers a suitable nesting-place for some kinds of germs; bacteria are found abundantly upon the skins of people who seldom bathe. Those who exercise actively, so as to make the sweat roll off in drops, wash off the pasty coating sufficiently to keep the pores open; but those who take little exercise, and do not keep the skin clean by bathing, are certain to suffer for their negligence.

Water will not mix with the oily matter of the skin, and therefore soap is used to dissolve it. The skin becomes dry, harsh or scaly when no oil is formed, or when it is washed off frequently with too strong soap or too much alkali, such as ammonia, borax or soda. These should never be used in the water of a bath for healthy people, although they are very useful in some diseases to cleanse the skin when feverish, broken out with pimples or a rash, as in scarlet fever, measles, etc. Vinegar and water used as a bath will counteract the effect of too strong alkalies; it is also very grateful to the skin when hot, dry and feverish.

It is important to know that both air and lipuids can pass through the pores into the body. Sailors cast away at sea without food or water, have kept themselves alive for days by wetting their clothes with sea-water; the moisture passes through the pores, but the salt can not do so.

Life has sometimes been saved, where a patient was very sick and could eat nothing, by immersing his body in a milk bath several times a day for several days until the crisis was past. A little milk passes through the skin, and helps nourish the system.

It is very curious that checking the action of the skin, whether done by taking cold, by lack of cleanliness, or in other ways, has a different effect on different people. In one it will produce cough, in another headache, and in others it is dyspepsia, diarrhoea, constipation, leucorrhœa, stiff joints, rheumatic pains, irritation or inflammation of the lungs, stomach, liver or kidneys. Those accustomed to warm rooms or climate take cold more easily than others; they should not neglect to put on more clothing toward night, in the season when the days are

warm and nights cool; when changes are made from thick to thinner garments, they should always be made in the morning.

The perspiration accomplishes something more than to carry off impurities. You have noticed that in a very hot day, the air will be made cooler and more pleasant, if water be sprinkled over the floor. Scientific men have a very learned explanation of the way evaporation cools the air; those who are interested will find it in any treatise on natural philosophy; all we need to say about it is, that evaporation of the sweat cools the body. There are little gate-keepers placed at each pore, or, in other words, a minute nerve is on guard to control the flow of the sweat glands. During exercise, and hot weather, when the heat of the body rises, these nerves open the doors wide, and spur up the glands to pour out moisture freely, which carries off the extra heat; in cold weather, or when the body is chilled, they close the pores to prevent loss of heat. The temperature of the body is, therefore, uniform the year round, and the same in the frigid as in the torrid zone—varying no more than one deg. from $98\frac{1}{2}$ degs. Fah., so long as a person is well. Owing to the perfect regulation of the internal temperature, the human body is enabled to safely endure astonishing variations of heat and cold. It is said that a certain sculptor in Germany repeatedly entered a furnace heated to 600 degs. to examine some work he had in it. In some parts of Europe, girls enter the ovens where bread is baking to turn the loaves, without suffering any inconvenience. Men work steadily in iron mills where the heat is overpowering to those not accustomed to it; while, on the other hand, man has proved that long exposure to a temperature far below the freezing point need not destroy life, as witness the experiences of the Arctic explorers and whalers. We have pointed out that closing the pores imprisons material detrimental to the health, and now the question naturally arises, What becomes of it when the pores are closed to preserve the necessary warmth? The answer will be apparent when we study the organs of the body.

The Bath.—The question of bathing is one that is often discussed, yet the physician is continually astonished at the gross negligence of the bath in families of intelligence, and who are in other respects watchful in regard to health. Indeed, outside the large cities it is the exception to find any provision made for bathing, even in the better class of houses. Fortunately, the lack of bath-tubs and bath-rooms, however inconvenient, does not make bathing an impossibility. A basin of water, soap, a towel, a wash-rag may be had everywhere, and with

these the skin can be thoroughly cleansed. The frequency of bathing depends upon circumstances. Many people take a daily bath with apparent benefit, although it is questionable if this practice is to be recommended in health. There is such a thing as making the skin too sensitive: if mankind had been intended for water animals the skin would have been differently constructed; as it is, too frequent application of water, either by too frequent baths or remaining long in the water, irritates the skin, often producing troublesome eruptions, which are not, as generally supposed, a sign that impurities are being drawn out of the blood to the surface, but are the result of the loss of protection which the sebum affords, from washing it away as fast as formed, also combined with irritation of the nerves at the surface.

All people, without exception, should bathe the whole surface of the body with good soap and water at least once a week. If there be any disagreeable odor to the skin, or accumulation of dirt from any cause, the bath is needed oftener than this. The reason why it seems to disagree with many people is owing to the way it is taken. A very common, but excellent way—*not to take a bath* is the following: A cool room, cool water, removal of all the clothing, moistening of the whole body before drying any part of it; and if this plan will not make a person chilly, produce a cold, and disagree with the constitution, it must be a strong one indeed.

If possible, a bath should be taken in a warm room, with doors and windows closed to shut out draughts. For cleansing, use warm water and a good quality of soap. Much of the toilet soap offered for use is unfit for the purpose, because of its impure origin; some of it has too large a proportion of alkali, which makes the skin dry, harsh and easily chap. Skin diseases some times originate in the irritation produced by the soap; they are frequently aggravated and prevented from healing by it. There are many good soaps to be had, so that a little experimenting will enable you to select one that agrees with your skin. If convenient, it makes one less liable to take cold to rinse off the soap and water with clean, cool water; but the latter alone will not dissolve the pasty matters that accumulate on the skin. Rub the skin thoroughly dry before putting on clothing. After a bath do not put on next the skin any garments that have been worn since they were washed; they have absorbed the vapors from the body, the skin is now in good condition to re-absorb them from the clothing—hence your labor will be partially wasted. If compelled to take your bath in a cool room, it may be done

safely, if done quickly, by removing the clothing from only one part of the body at a time, drying it thoroughly and covering before uncovering another part. After the bath the skin should be reddened and warm; vigorous rubbing or sparring will do this, unless the circulation is very feeble, in which case bathing should never be done in a cool room.

The hair needs washing as often as the body itself, but it should be dried quickly to prevent an attack of catarrh. Soap is apt to make the scalp scaly and the hair harsh, besides it fades some colors. The yellow of an egg rubbed into the scalp and over the hair makes a thick lather with soft water; it cleanses the scalp, leaving the hair soft and slightly oily; and it is a most useful application to the head. No soap should be used with it, neither borax nor ammonia.

Because the blood is brought to the surface by a properly conducted bath, it is removed from other organs, therefore it should not be taken within an hour after eating, lest it interfere with digestion. Feeble persons are made sick by disregarding this rule; neither should a bath be indulged in while the body is heated by active exercise; wait till it cools off first.

The universal prejudice in favor of washing an infant all over every day is hard to account for. The practice has washed out of existence scores of feeble little lives. Why a babe, clad in clean garments, that are changed daily, exposed to nothing which can soil its body except its own excretions, should need a daily scrubbing, while a grown person—its own mother, for example, engaged in cleaning the house, the soiled garments of the family, and other sources of filth, needs a bath only rarely, is one of the problems no doctor is able to figure out. This is not saying that an infant does not need frequent attention; but it does not need to have its whole body uncovered, exposed to a chill, and made miserable every day to keep it in a clean and wholesome condition.

Clothing plays an important part in promoting our health, to say nothing of the influence of fashion on mankind. The choice of it is governed more by custom, or caprice, than by any definite idea of the purpose it is to serve. In consequence, we are accustomed to seeing people during the dog-days overloaded with garments intended for cold weather, and when the thermometer is nearing zero, it is no unusual spectacle to see suits which would be very appropriate for summer, worn with blue lips and shivering forms, by fashion's slaves. The strange and clumsy forms of garments chosen by health reformers

have prejudiced that portion of the world who believe that "looks are quite as important as comfort" against any special study of the useful and the healthful in the selection of garments. There never was a time in the history of the world, when it was possible for both men and women to combine in their costumes so many of the elements of health and comeliness, without appearing peculiar, as at present. There is no excuse but that of ignorance, for dressing so as to endanger the health at any time of year; yet notice, at the next public gathering you attend, the proportion of people comfortably and suitably clad for the temperature then prevailing,—you will find it small. The first object of clothing for cold weather is to prevent loss of heat; in warm weather, to promote it: at both seasons it must provide for the escape of the perspiration, and must not accumulate dampness from the atmosphere. Colds are the origin of the great majority of fatal diseases, and most colds arise from sudden chilling of some portion of the body which the clothing should have protected. The question of selection of clothing bears, then, directly upon the prevention of disease and the preservation of life. The materials commonly used may be classified in the order of their merit as follows:

Linen is a good conductor of heat, therefore favors its escape from the body when worn next the skin, but it cools the surface quickly, and is no protector against sudden chills.

Cotton conducts heat less rapidly than linen, and is therefore warmer. It absorbs moisture, thereby hindering evaporation and cooling of the surface.

Woolen is a non-conductor of heat. It takes up moisture slowly, therefore is a good protector against damp. It dries slowly when moist, hence it cools the body slowly. As an equalizer of temperature, and a protector of the surface from sudden chill, wool stands at the head of our usual wearing fabrics, and should be worn next the skin when it can be tolerated.

Clothing should be as light in weight as it can be made, and, at the same time, provide sufficient protection. One part may be overloaded, while other parts are scantily clad. The practice of dressing children with nothing but stockings between the knee and foot in cold weather is a positive cruelty. It is no uncommon spectacle to see young misses wearing hoods to protect the head, thick warm mittens for the hands, comfortable cloaks and overshoes, with the space between the ankle and knee covered only by a single thickness of stocking. Boys are

frequently dressed in a like manner. On the other hand, it is possible to wrap up too much. Thick coverings, by retaining the warmth, increase the perspiration. This produces open pores, a soft and sensitive skin, which is easily chilled. Those who have tried it know that the habit of bundling up the neck, if begun as winter opens, must be kept up until spring, or the penalty of sore throat and severe cold will be exacted for any neglect to do so. If the neck never receives extra wrapping, it is rarely affected by exposure to the weather. Those who are subject to sore throats on slight exposure can "toughen them" by bathing the neck in cool water each morning. In childhood and old age the body needs warmer clothing than during middle life. Flannel is best for the two extremes in life. The majority of old people die of pneumonia, or other complaints brought on by sudden chilling of the body. Common sense is a far better guide than custom in the selection of clothing adapted to our wants. In our climate, where sudden changes of temperature are the rule, any ironclad law as to what shall be worn during the season is out of place. Those who lay aside flannels for the summer should not do so until nearly the first of June, while October, at latest, should find them worn again. Wise people, who believe that prevention is better than cure, change their clothing from thinner to thicker, or the opposite, immediately upon a change of temperature, without reference to the name of the season.

Garments should not be tight about the neck, the waist or limbs, because compression at any of those places interferes with the circulation, producing in some part of its course a damming up of the blood, and congestion, as the water in a river is pent up and spreads out over the low places when a mill-dam is thrown across it. Any part is said to be congested when a larger amount of blood than usual is crowded into it, and is stagnant.

Tight bands around the throat produce flushed face, or congestion of the brain; tight bands about the waist produce congestion of some of the organs. If the heart is weak, it increases the liability to serious disease of that organ; piles have been known to be brought on by the same cause. Tight garters, or, indeed, any garters which encircle the limbs, cause cold feet, bloating of the feet, and favor varicose veins. Tight boots and gloves make cold feet and hands.

The color of clothing for those who are little exposed to the extremes of weather is of little consequence, but those who must endure the direct rays of the hot sun while at work, or actively exercising,

can keep cooler in white garments; gray ranks next, while black is the most uncomfortable. Those exposed to cold winds are best protected by leather or India-rubber coverings. The latter are disagreeable when worn long at a time, because evaporation of perspiration is prevented, and the clothing becomes saturated, clammy and chilly. Woolen cloth permits the wind to blow through, but it is the most comfortable to wear under India-rubber or gossamer garments. Those who are unexpectedly exposed to a keen, cutting wind, without sufficient covering, will find great comfort by inserting a folded newspaper beneath the outer garment over the parts most exposed. A folded newspaper, placed over the chest outside the undershirt, is one of the best chest protectors. If the lungs are weak, another paper should be placed over the back part of the chest, extending from the lower points of the shoulder blades to the neck. The old idea that when the clothes are damp they must be worn until dry "to prevent taking cold" is true or false according to circumstances. Hardy persons, accustomed to out-door exposure, seldom suffer from wetting of the clothes while at work, or exercising; but let those unused to such a life beware of damp garments. If they become wet at a distance from home, walk to some place where they can be exchanged for dry ones. If unable to walk, then dry wraps should be put on over the wet ones, or a gossamer or other protector, to prevent evaporation. The body should be rubbed vigorously when drying it before putting on dry clothes, and the feet should be warmed. If chilly sensations follow, take hot drinks to restore the surface heat. Common tea, ginger tea, or mint tea are among the best restoratives. Children attending country schools in the winter frequently suffer severely from the thoughtlessness of parents and teachers. In rainy weather, during thaws, and where the way leads over wet, muddy roads, the feet are almost always damp by the time the school-house is reached. Once there, all crowd around the stove; there is little of courtesy or kindness shown by the stronger to the weaker, consequently those in the greatest need of warmth are least apt to receive it. School can not be conducted with the children gathered about the stove; therefore, while still wet and chilly, at the opening hour, they must go to their seats. If parents were thoughtful they would provide a dry pair of stockings, an extra pair of shoes, and wraps that will completely envelop the clothing for damp and cold weather. If the teachers understood the needs of their little flock, they would see that the dry stockings and shoes are put on, and that the

damp ones are placed where they can dry before they are needed again. The plea of extra expense urged against this plan is senseless; the extra doctor's bills which a family usually incurs during the year from the cause referred to, will more than buy everything necessary for the comfortable and healthy clothing of the school children.

CHAPTER IV.

THE SERVANTS OF THE BODY.

The work of building up, and keeping our bodies swept and garnished, is done by numerous servants, to which the name organs is given. An organ is an instrument which does something; for example, the eye sees, the lungs breathe, the stomach digests. To describe and locate all the organs of the body, and at the same time give a clear idea of the varied work they do, would require a large volume; our present space only permits a description of those which are somewhat under our control, and therefore are healthy or unhealthy according to the way we use them.

The cavity of the body is divided into two compartments by the diaphragm, already described among the muscles. This thin partition wall is similar to the floor which divides a house into two stories. In the upper story, or chest, are placed the lungs and heart. These are vital organs; a slight injury to them will destroy us, and therefore they are carefully protected by bony but elastic walls. Below the diaphragm is the abdomen, in which are placed the liver, stomach, spleen, pancreas, kidneys, bladder, intestines and sexual organs. As the size of some of these organs vary considerably, according as they are full or empty, they are covered in front by the elastic muscles which form the walls of the abdomen; the latter will stretch out to accommodate the increase in size of the organs within, and contract as the organs diminish. The diaphragm is elastic, therefore movable; when a full breath is taken the lungs expand, and descend nearly two inches, to accommodate their increased size, the ribs rise, the diaphragm descends and draws down the heart nearly an inch and a half, consequently the contents of the abdomen are pushed down and outward. As the breath goes out the diaphragm rises, the ribs fall, the heart returns to its place and the lungs are compressed to force out the air.

The larynx is the organ of the voice, and is placed at the upper part of the air passage at the upper and fore part of the neck; when prominent it forms the Adam's Apple. Connected with it is the trachea or air tube (windpipe), which is about $4\frac{1}{2}$ inches long; near the upper

end of the breast bone it divides into two branches called bronchi, which enter the lungs—the one on the right being about an inch long, the one on the left nearly two inches. Any object dropping into the larynx may be carried down the trachea, and if small enough may pass on through the bronchi into the lung. The trachea varies from three-quarters to one inch in diameter; the right bronchial tube being larger than its fellow, the object, if it passes through the trachea, will nearly always be drawn into the right lung. The upper opening of the air passage is guarded by a thin, gristly valve (epiglottis), placed behind the tongue; while breathing this valve stands up, the tip curving toward the tongue, but when ready to swallow the valve is drawn downward and backward so as to completely close the larynx. Those who laugh or talk while swallowing food or drink, are very liable to have it “go down the wrong way”—that is, the valve is pulled two ways at once; the breath must come and go in talking or laughing, which draws it up; to make a passage for the food into the swallowing tube it is drawn down, and between the two, like “the politician on the fence,” it fails them both. Choking usually comes from food falling into the windpipe; something must be done at once, for in two or three minutes the patient will be dead if not relieved. If a child be choked, and the object is small like a button, a cherry-stone, etc., lift him suddenly by the feet with face down; if the object does not instantly drop out, slap him sharply on the back of the shoulders; but while doing this watch closely, so that if the object drops down and lodges in the opening of the windpipe you can hook it out with the finger. If the object which excites choking be very small, like coffee grounds, give snuff to produce sneezing; a little cayenne, or even black pepper, will do as well. After diphtheria and some other throat disorders, the swallowing muscles are relaxed, and occasionally partially paralyzed, in which case great care must be given to the act of swallowing. It will not do for such persons to talk and eat at the same time. A chunk of meat lodging in the throat so as to shut out the air from the lungs has many times caused death. This happens now and then at hotel tables. In the excitement that follows the patient stands no chance at all to be saved; he dies while waiting for the doctor. In such an emergency, strike a forcible blow with the open hand on the shoulders. Don't wait, but follow this immediately by seizing the tongue with the left hand, and with the fore finger of the right hand search for the morsel, which must be pulled out.

The folly of allowing young children to play with objects that can be drawn into the air passages, is forcibly illustrated by the following case, which once fell under the observation of the writer. A little boy, creeping about the floor, was given an ear of corn for a plaything. Suddenly he began to cough violently, grew black in the face, and seemed about to strangle. The mother, almost overcome with fright, managed to call her husband from the field, but, failing to help the little fellow, the doctor was sent for. On his arrival all inquiry failed to explain the cause of the trouble, the mother being too much excited to remember the fatal plaything. Three days the child lingered on in frightful distress, and then died. A post-mortem examination revealed a single kernel of corn drawn quite into the right lung, and lodged so tightly that it had to be pried out with a knife. A sore throat, when much swollen, interferes with the perfect working of this valve, and causes great difficulty in swallowing medicine or food. We naturally are in an erect position when eating or drinking ; we can swallow safely while lying down by attending strictly to our business, but in that position there is always more danger of something finding its way into the windpipe ; that this is dangerous, Nature promptly shows us by the distress and struggle caused to throw it out. When people are unconscious, very feeble, or incapable of averting this danger, like the imbecile or young children, it is unsafe to pour water, medicine or any liquid into the mouth while they are lying on their back ; it is quite likely to run into the windpipe and strangle them exactly as if they were drowned. The following incident, which occurred recently, illustrates this fact. A child nearly a year old had been sick for a fortnight, but was recovering, although still very weak. The little one was lying in its crib, having just wakened from a nap, when the mother saw the doctor drive up, which reminded her that a dose of medicine was due. She hastily poured a teaspoonful into the child's mouth without raising its head ; it strangled instantly, and before the doctor could reach the door it was dead. There is no doubt that some of the deaths reported as convulsions are caused by the careless practice of feeding or dosing a young child while lying on its back. If you doubt the truth of these statements, try the experiment of lying down on the back, and drinking a glass of water administered from a bottle or spoon, or in any other convenient way. Instinctively, if you are not on your guard, you will raise the head up before trying to swallow. Children at play should not be permitted to hold objects in their mouths ; it is a bad habit, which makes an immense amount of

trouble first and last. Behind the opening to the air passage lies the tube leading to the stomach, of which we shall have something to say by-and-by.

The *bronchi* or bronchial tubes divide and subdivide into smaller and smaller branches (just as the branches of a tree are divided into

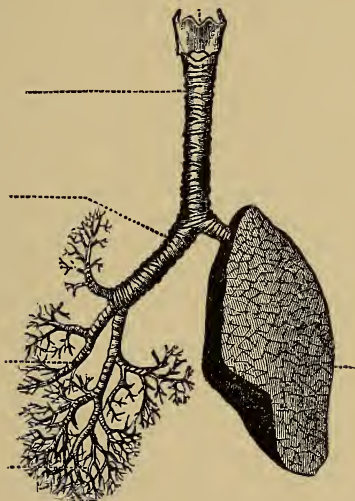


FIG. 5. LEFT LUNG AND AIR TUBES OF THE RIGHT LUNG.

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|--------------------|--|
| L. Larynx. | C. Bronchial Tube. |
| T. Trachea. | E. Small Branches of the Bronchial Tube. |
| B. Right Bronchus. | A. Left Lung. |

smaller and smaller ones, until they become the tiniest twigs), and terminate in minute twigs, about each of which is a cluster of air cells like grapes on a stem. A soap bubble is an example of an air cell; but the smallest soap bubble you ever saw is many, many times larger than the largest air cell in the lungs, which is 1-70 of an inch in diameter, and, taking the smaller ones, it would need 200 of them placed side by side to make one inch. The act of taking air into the chest (thorax) is called inspiration; breathing it out, expiration—together they make respiration.

The lungs.—The organs of respiration are the lungs, of which there are two; the one on the right side is about two ounces heavier than the one on the left. The weight of both together is about 42 ounces, but this varies with the size of the body. They are of light, spongy texture, and float upon water. Each lung is inclosed in a double sac, or bag—the pleura. One fold of this bag adheres closely to the lung substance, the other fold to the walls of the chest, and between the folds there is always found a small amount of fluid, which resembles whey. It keeps the sac moist, and permits the folds to glide over each other without friction. Sometimes a cold affects the pleura, which gives rise to the disease called pleurisy, in which the inflammation is sometimes so great as to seal the two folds of pleura together. This interferes considerably with the action of the lung ever afterward. Sometimes the serum, or whey-like fluid between the folds of the pleura, is greatly increased by disease, making dropsy of the chest, and occasionally pus forms there. In the latter case it has to be drawn off to save life.

The heart.—Between the lungs lies the heart. This is the most important organ in the body. It is small—about the size of the closed fist—but from birth to death it works incessantly, waking or sleeping. Whether in health or in disease, no matter what other organs are disabled and quit work, the heart goes steadily on; when it stops life ceases.

It is placed behind the breast-bone obliquely, broad end up; if the body were cut in two equal parts through the spine and breast-bone, about one-third of the heart would be in the right half, and two-thirds in the left. This organ is also inclosed in a double sac, called the *pericardium*, which resembles the one surrounding the lungs. There is serum formed between the folds, as in the pleura; this serum may be increased in quantity by disease, making “dropsy of the heart.” Rheumatism, when it goes to the heart, settles in this covering. The heart is hollow, and is divided by a muscular wall into two halves, named, from their position, right and left. This wall is solid in grown people, but in babies at birth there is an opening through it, which should close up permanently when the child begins to breathe. If it does not, circulation is obstructed, making a “blue child.” Such a one generally lives but a short time, although instances are recorded of their having survived from ten to twenty years; but there is always great distress in breathing, which is made worse by play or exercise; it is a mercy when death comes to end such suffering. Some old nurses

spank a new-born babe when it grows blue in the face; this produces a vigorous cry and a full, deep breath, which instantly closes the opening between the two halves of the heart. This seems like cruel treatment; it is, however, frequently efficacious if done immediately, but is too late after an hour or two. Each half of the heart is divided into two chambers—the upper is the *auricle*; the lower, the *ventricle*. They each hold about three ounces of blood when filled. The partition which divides them contains a valve which opens downward to let the blood pass through, but closes to prevent its backward flow. These valves act in the same way as the valves in a pump or steam engine. The heart is a powerful pump, that sends the blood to all parts of the body. The amount of blood in the body at once forms about one-tenth of its weight. It has been compared to a river flowing through a town, upon which many little boats laden with supplies for the inhabitants, while into it are poured the wastes from the kitchens and the refuse of the sewers. The blood sent through the body *from* the heart is bright red and pure; it comes back to the heart, dark, red or dirty, with the impurities it has gathered up in its course. Only the dirty, dark blood goes into the right auricle; only pure, bright, red blood goes into the left. The tubes or pipes which carry the blood thrown out of the heart are called *arteries*; the ones which bring it back are the *veins*.

The Circulation of the Blood.—The veins which open into the auricles are provided with valves which close when they are filled, to prevent the backward flow of blood, when they contract to force it forward into the ventricles. The dirty blood from all parts of the body is brought to the right auricle, which throws it into the right ventricle, from whence it is carried direct to the lungs, where the impurities are burned out by the oxygen in the air cells. This changes it to bright red—purifies it; after which it is carried back to the left auricle; this contracts, sending it into the left ventricle, which pumps it into all parts of the body. The heart makes a sound at each contraction; the healthy, natural sound resembles the syllables, rub-dub—the first pronounced slowly, the second quickly; and between each an interval of rest. We shall find, as we go on, *rest* is no less important than *exercise*. Nature has provided that all organs over which we have no control, receive both exercise and rest sufficient to keep them in good order—unless we interfere with nature in ways that will become apparent as the different parts of the body are described.

It seems very simple, this method in which the blood makes its

rounds; but for ages it was a great mystery, and Harvey, who discovered it, was dreadfully persecuted. The ancients believed the arteries contained air, because they are commonly found empty after death. The arteries are very strong pipes, having three coats, internal, middle and external. If a large artery is wounded the blood is lost very rapidly; therefore, for their better protection, they are placed deep down against the bones, and never lie near the surface, as the veins do. The internal coat of the artery is very soft and smooth, to prevent friction from contact with the stream of blood passing through it. The middle and external coats are very elastic; the former lets the artery stretch out to increase its diameter, the latter its length. As one lot of blood is thrown with great force from the heart, the artery stretches open to receive it, but immediately contracts behind it and helps to force it along. It is very necessary that these several coats of the arteries be strong and elastic; when they lose their elasticity and become weak, the blood flows sluggishly. Old people sometimes have lime deposited in the coats of the arteries, which makes the walls hard and brittle; their blood moves slowly, which causes cold hands and feet. In rare cases the arteries become like pipe stems; some of the smaller ones fill up, the parts beyond can not be fed by new supplies of blood, and they die. This disease is called *gangrene*, and is most apt to attack the feet. Sometimes it creeps up to the knee or higher; after a few days a line of separation, perfectly distinct, may be seen between the living and dead flesh, when the surgeon has to saw through the bone and complete the amputation which Nature has begun. The chapter on food will describe how danger from this disease of the arteries may be lessened. *Aneurism* is caused by the giving way of one or more of the coats of the arteries. It is brought on by heavy lifting, severe vomiting, or some unusual violent exertion like wrestling. The coat which contracts or draws up the artery breaks, leaving only the outside elastic coat, and the soft lining to hold the blood at that point; these coats stretch out more and more, as gradually a large tumor filled with blood forms there; they grow thinner from the stretching, and at last, after a long time, they give way, and a sudden hæmorrhage destroys life. There is no use to attempt home treatment for such a disease as this; it needs the attention of a skillful surgeon, and if taken in season can often be cured.

As we have seen, the blood is carried out from the heart bright, red and pure; it is thrown out by sudden contractions or shutting up of the

ventricles, and therefore flows by jerks or spurts; it is thrown with a force equal to a powerful pump or piston; the rebound from striking the elastic coats of the arteries adds to the force with which it is sent forward, and the most of its way it is helped onward by the force of gravity. We have now to examine how it gets back to the heart through a different set of pipes.

THE VEINS have three coats like the arteries, but with this difference: owing to the weakness of the middle coat the veins do not stand open when cut through, as the arteries do, and they do not contract to help move on the volume of blood flowing through them. This blood which the veins contain is dark colored and loaded with waste matters, dumped into it from the various tissues through which it has been carried. This makes them show through the skin, dark

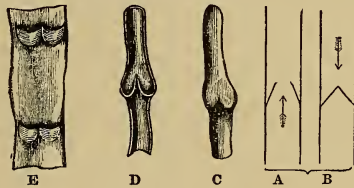


FIG. 6. VEINS.

- A. Diagram of vein showing the direction in which the blood naturally passes by the valves.
- B. Diagram showing how the valves close to prevent the blood from flowing backward.
- C. The appearance of the outside of an obstructed vein.
- D. Shows how the valves cause the knotted appearance.
- E. A section of vein split open and flattened out, showing the valves or pockets attached to its walls.

blue in those places where they lie near the surface. They may be plainly seen at the wrist.

It has to be carried for the most part up hill, or "against gravity," hence moves slowly as compared with that which rushes through the arteries. The force of the heart in propelling the blood is lost by the time it passes into the veins, except as it fills the vessels behind the advancing column, and keeps crowding the contents on by each fresh amount driven into them.

What then is the chief agent in helping the blood forward through the veins to complete its circuit? At short intervals are found valves, which press closely against the walls of the veins to let the blood pass,

then close, and prevent it from falling back. Examine the picture illustrating these valves; it will give a better idea of them than any written description. It is the valves which give the knotted appearance to the veins where there is an obstruction to the circulation. Press very firmly upon the wrist a little above the hand, and notice how the veins bulge out between the hand and the point pressed upon. Remembering that the blood flows outward from the heart through the arteries and backward to the heart through the veins, it will be seen that when these vessels are cut off or broken, there will be a hæmorrhage. To stop it pressure must be used; when the injured vessel is an artery the pressure must be *between the wound and the heart*, to stop the latter from pumping more blood out at the injured point, and it should be applied as near the wound as possible. If the wound opens a vein, the pressure must be *on the side of the wound opposite the heart*, or, in other words, *back of the injury*, because the blood is being all the time crowded forward to the heart, and must be prevented from reaching the wound. For example, suppose the wound be at the knee: if the blood spurts out bright red, it is an artery, and the pressure must be applied over the artery and *above the knee*; if the blood flows in a steady stream and is dark colored, the injured vessel is a vein, and the pressure must be applied on it at a point just *below the knee*. Varicose veins are enlarged and knotted vessels, usually found below the knee, although veins in other parts of the body sometimes become varicose. This condition is generally caused by an obstruction somewhere, which hinders the return of the blood to the heart, and dams it up in the vessels; in rare cases it is caused by a weak heart, or some disease of the veins. Whenever the blood vessels are seen to stand out prominently and are of dark color, the cause should be sought for and removed to prevent the veins becoming varicose. Garters which fasten around the leg are a frequent cause—occasionally tight corsets or waist bands; constipation is more likely to produce enlarged veins than anything else that can be named. The pressure of blood on the walls stretches them out thinner and thinner, until at last they give way and bleed dangerously. When this happens the only thing to be done is to lie down, raise the limb a little higher than the body, and press on the vein between the bleeding point and the foot. Cloths wrung out of ice-cold water may be laid on, and frequently changed to stop the hæmorrhage. Anything recommended in this volume for stopping bleeding may be applied. It is always best to send for a doctor, but

if one can not be had the patient should keep in bed, with the limb raised on a pillow until the broken vein is healed, which will take but a few days. Before attempting to arise, a soft fine white or unbleached (never use colored) stocking should be drawn on—it should fit perfectly smooth; over this draw on an elastic stocking, or apply a perforated elastic bandage. These may be had of your druggist; if he does not keep them, he will order them for you. If an ulcer remains, apply, before covering the limb a folded piece of old linen slightly coated with clean, unsalted mutton tallow, or well-washed unsalted butter, merely to keep the linen from sticking to the sore. Under the head of “Ulcers” more particular directions will be given for healing these sores.

When the blood is dammed up in parts where the flesh is soft, it is squeezed through the coats of the veins, and forms little bloody tumors, or blood blisters; sometimes a portion of the vein will become enlarged, forming a little bag of blood in the flesh or sticking out through it; when these form in the lower end of the bowels (the rectum), they are called piles, or hæmorrhoids. They give rise to great suffering.

The treatment which will cure them when they are first formed, and greatly relieve them when of long standing, is the following:

Treatment for Piles.—First of all it is necessary to remove constipation, and until this is done it is useless to apply remedies to the pile tumors. One of the most effective means of doing this is by the judicious use of a good cathartic pill. There are none better than Eilert's Daylight Liver Pills for this purpose. A word of caution is in order here as to taking cathartics. People usually take too strong doses, because they do not understand how medicine acts. This is a mistake, because it may do great injury. Castor oil is a medicine with which every reader is probably acquainted. It is considered harmless, and usually is, but in one instance known to the writer a man who had taken several doses of pills without effect drank a tea-cupful of castor oil for a dose; it killed him within forty-eight hours. In another case a patient who was partial to a certain brand of pills in the market, noted chiefly for their griping effect, noticed on the box that the dose was 3 to 6 pills; therefore, to make sure work of it, he swallowed 8 at once. The next day he was compelled to send for a doctor, for his bowels were completely paralyzed, and he could not leave his bed for weeks. The pills we have named do not possess such qualities as the last described, but they will act better if taken as follows: If

moderately hard to operate upon, take two pills, never more than three, for a dose; take them at bed time and wait. If the bowels do not move the next day, at bed time, take another dose of the same number, and keep on until the bowels move freely taking but one dose a day, and no more than three pills at one time. After they begin to operate, take one pill at bed time, and increase the dose if the bowels fail to move during the day. These pills unload the liver and clear out the whole intestinal canal. After the bowels are regulated the piles will be found to have improved. One of the following ointments will then do good service, applied directly to the tumors:

No. 1. *Pile Ointment*.—Take nutgalls in very fine powder, 60 grains; lard, one ounce; carbolic acid crystals 10 grains; opium (powdered), 30 grains; powdered camphor gum, 30 grains. Rub the lard and carbolic acid together in a mortar till thoroughly mixed; then add the other ingredients one at a time, mixing each before the next is added. Keep in a closely covered tin or glass receptacle. To use, take a piece as large as a very large pea, and rub into the piles in the morning and at night.

No. 2. *Pile Ointment*.—Take equal parts of witch hazel bark, white oak bark, and apple-tree bark (that from the root is best). Cover them with soft water, let them stand over night in an earthen bowl or jar; in the morning let them gently simmer over the stove, keeping the vessel covered for half an hour. Remove from the fire, let it cool, strain. Boil this decoction down to a thick syrup, and add as many ounces of fresh, sweet lard as there were of the barks; simmer it over a slow fire with occasional stirring till the water is out, taking care not to burn it. For summer use a little clean beeswax may be added. Use the same as No. 1.

No. 3. *Pile Suppositories*.—These are best made by your druggist. Take carbolic acid (refined), 12 grains; tannic acid, 24 grains; fresh, pure lard, 1 ounce; white wax, 10 grains. Melt the lard and stir in the carbolic acid; then mix well with the wax, and stir all together in a mortar with the tannic acid till it is evenly mixed; then divide into 12 equal parts. Insert one in the rectum at bed time. If the piles are very troublesome, first inject a cup of hot or cold water—whichever is most agreeable to the parts; when it passes away, use the suppository.

In very troublesome cases which are not relieved by the treatment described, go to your family physician and permit him to inject the

pile tumors with a preparation which will cause them to shrink up and disappear. The operation is not dangerous, and hurts no more than a slight prick with a needle, so that it is easily borne without chloroform or ether. Your own physician is to be trusted rather than a stranger, and especially a traveling doctor who has no reputation to lose, and as a rule is not at all particular about cleaning his instruments, even when he has skill in using them. An instance in point occurred in Canada last year. One of those traveling show doctors who pulls teeth free appeared in a town, and had his hands full attending to the jaws of people eager to get something for nothing, even though that something was as undesirable as pulling teeth. Some days later everyone not protected by a previous attack was taken down with small-pox. The local doctors investigated, and found the traveling doctor had come directly from a distant point where small-pox was prevailing, and had undoubtedly operated on some one coming down with the disease.

How the Blood Passes from the Arteries to the Veins.

—We have described the circulation of the blood from the instant that it leaves the heart until its return, except during its passage from the arteries to the veins. The arteries divide and subdivide into smaller and smaller branches until they terminate in a network of pipes finer than a hair, which are called capillaries, from a Latin word meaning hair. They are so small it would take 3,000 placed side by side to make an inch. They are woven together like lace-work, and their coat or wall is so thin that the blood can easily pass through it. These are highly important portions of our body, because it is in and around them that the work of building up and tearing down the tissues (for these changes are going on incessantly) takes place. The walls of these capillaries sometimes become thickened or clogged up by substances that ought not to be there, and especially by disease germs, which hinder or put a stop to the work of nutrition, and then we are sick. Complaints caused by the latter are frequently called “filth diseases,” because these species of germs can not nest and develop where everything is clean, any more than maggots can; the eggs from which they are hatched must be deposited in suitable material.

The blood going into the capillaries is bright, red and clean; once there it is spread out for the bones, the flesh, the nerves to pick out their share, which they do, and at the same time deposit atoms

which they have used up—the ashes and other debris of the human kitchen. As the blood passes on through these tiny vessels it gradually parts with all its nutrient elements, becoming dirty and black; and in this state it is crowded on into the veins, from whence we have already traced it back to the heart.

The blood when taken from the body soon separates, forming a clot and a thin whey-like fluid, called serum. The clot is made up of blood cells, or disks, and a substance called fibrin. The fibrin when exposed to the air appears as a stringy substance, and entangles in its meshes the disks; if it were not for this it would be certain death every time a large blood vessel is cut, for nothing could stop the flow of blood. If the wound be stopped by pressure, the fibrin separates in a few minutes, forming a clot which plugs up the bleeding vessels. Nothing else will prevent a fatal hæmorrhage. The substances put on to stop the blood are intended to hasten the forming of a clot, but, with the exception of cold water or ice, they are useless. The best way to heal a cut is to bind it up “in the blood,” and leave it undisturbed for a day or two, until the wound feels uncomfortable. Never put on a quid of tobacco. It is a filthy and dangerous expedient. A healthy boy of sixteen cut his finger badly in a shop where a number of men were at work. One of them took the quid from his mouth, placed it over the wound, bound it up. Unfortunately the man was suffering from a loathsome disease which affected his mouth. It was conveyed to the finger by the tobacco quid, and the boy had his constitution seriously undermined, besides nearly losing his life. Never use anything but clean water from a clean vessel and clean cloths in dressing a cut or open wound, no matter how small it is. If it becomes unhealthy, there is no better cleanser and stimulant than Uncle Sam’s Nerve and Bone Liniment.

The disks when looked at through a microscope resemble tiny flat plates, hollowed a little in the center, they adhere together in rolls, looking like rolls of coin in the drop of blood under the instrument, but in the body they are separate. They may be seen in a living frog’s foot, which is very transparent when stretched out under the microscope. The blood disks vary in shape in different animals—a fact which occasionally becomes of importance in murder trials. Not far from Chicago a brutal murder was committed several years ago. A man was arrested on suspicion of being the murderer. Blood stains were found on a suit of clothes he had been wearing. He claimed they

were made by the blood of his dog, which had been wounded, and bled freely while being dressed. The garments were taken to a microscopist, who carefully extracted the blood, and found in it the disks peculiar to dogs, but no human ones. As the evidence of his connection with the crime was purely circumstantial, the man escaped conviction, aided by this evidence.

The proverb that "blood is thicker than water" is strictly true, for it is thickened by these disks, of which there are no less than 70,000,000,000—quite eighty times the population of the globe—in a cubic inch. There are also dry solid substances dissolved in it. For the benefit of those who are fond of figures, we append the following statement of the composition of the blood: It is about $\frac{1}{4}$ dry solid matter, and $\frac{3}{4}$ water. In every 100 parts there are, to be exact, 79 parts water to 21 parts dry solids. Of the 21 parts of dry solids, 12 parts are disks, or corpuscles; of the remaining 9 parts, $\frac{2}{3}$ is albumen (a substance like the white of egg), and $\frac{1}{3}$ salts, fat and sugar. In every 100 cubic inches of blood there are 50 cubic inches of gases, carbonic acid, oxygen and nitrogen—the same that exists in the air, but they are in different proportions in the blood. The disks are the oxygen carriers; it is oxygen which gives them their bright red color, and as they part with it they become dark and changed in form. They also carry fat, phosphates, iron, potash and give the blood its red color. If they become reduced in number, the blood is pale, and is said to be thin, or "turning to water." Meat diet, when well digested, increases the red blood disks. The serum, or watery part of the blood, contains chlorine and soda in addition to other salts. Every element of which the body is composed is found in the blood; there is continually a stream of matter flowing from the mineral world through the vegetable and animal creation, up to man and back again to the air and soil, there to be reconstructed, and again begin the eternal round which shall cease only when the earth and its inhabitants are no more.

The blood is of the same temperature summer and winter, and if we were to breathe air as hot as boiling water, it would still remain the same. Place a thermometer bulb in the mouth, close the lips so the cold air can not touch it, and in a few minutes it will rise to $98\frac{1}{2}$ degs. Water heated to this point feels to the hand merely "blood warm," or, if the hand is used to working in very hot water, $98\frac{1}{2}$ degs. will seem cool. A bath for children should be tested by a thermometer; the hand must not be trusted as a guide, for water that will seem comfortably

warm to a toughened hand may injure a child severely. The blood carries with it heat. The hands and feet get cold in winter because the cold contracts or draws up the blood vessels, so that not much blood can get into them. Tight shoes, tight garters, tight gloves, by obstructing the circulation, make the extremities cold. To keep warm, when obliged to ride out on a cold day, wash the face, hands and feet in cold water, rub them dry with a coarse towel, which brings the blood and heat to the surface. Drivers throw their arms about to keep warm, because the movement of muscles throws blood into the extremities. Exercise causes the muscles to contract over the vessels in such a way as to propel the blood on through its circuit; it therefore courses through the veins with vigor, making the whole body more healthful. It is probably true that where there can be found one who is suffering from overwork, there may be found a hundred who suffer from lack of exercise. It is not enough to work; the work must be of such varied nature as to call into action every muscle of the body during some part of the day; if this be not the case, the muscles remaining inactive during necessary labor must be exercised during the hours of recreation, or the health will suffer. Blushing is due to the sudden filling of the capillaries or little vessels connecting the arteries and veins. A sudden emotion dilates them, the blood rushes in, the red color gives the flush to the face. Fainting is accompanied by the opposite state; these minute vessels contract and shut out the blood, hence the pale face.

Attention firmly fixed upon a part alters the circulation through it, and disturbs the perfect balance of nourishment and work. It was not intended that we should concern ourselves about the way the servants of the body, which are not under the control of our will, carry on their work; they are purposely placed beyond our direct control, to leave our minds free to do the business of life. If we allow ourselves to fear that Dame Nature does not understand her business, and look too closely after our bodies, we bring upon us the very ills we dread.

The unfortunate belief that certain diseases are hereditary, and therefore unavoidable, has filled many a grave years before it would have been filled in the ordinary course of events. An example of this kind occurs to us now. Mrs. H., a physician's wife, exceedingly nervous, but in perfect health, was very much excited by a sudden summons to a distant city to the bedside of a dying sister. She had been kept in ignorance of the fact that her sister had consumption, but arrived a few

days before her death and witnessed her suffering, which was extreme. When the sister was dying she addressed her last word to Mrs. H., who firmly believed the superstition that the one to whom the dying addresses the last word will be the next to die. She returned home after the funeral in a very gloomy state of mind, and told her husband she had consumption, and could live but a few months. At first he laughed at her ; friends assisted in trying to ridicule the notion away, but it was useless. After a few weeks, as she seemed indeed to be failing, a council of physicians was called ; she was carefully examined, but not a trace of lung or any other disease existed. She was taken on a journey, everything was done to divert her mind from what she believed to be her impending fate, but nothing produced any effect upon her. About four months later, during a sudden change in the weather, she took a severe cold, began to cough, and drifted swiftly into the state she had so greatly feared. Advice was repeatedly sought from those of experience, and all united in the opinion that the disease which carried her off originated in her persistent idea that it was inevitable.

CHAPTER V.

THE EAR.—LOSS OF HEARING.—TREATMENT OF EAR DISEASES.

The organ of hearing has three parts: the external ear, the middle ear, and the internal ear. The external ear consists of two parts, the auricle, also called pinna (meaning a wing) and the auditory canal. The auricle is formed of cartilage, or gristle, covered with skin and shaped to catch the waves of sound, and direct them into the auditory canal. In the young and vigorous the auricle is stiff, firm, stands out from the head, and the curves are very distinct; in the aged or feeble it is flabby, and often lies flat against the head; the hearing is impaired in these cases. It is certain that as people become deaf the auricle changes in appearance. The hearing is injured by anything that flattens it against the side of the head. The hats and bonnets children wear should not be tied on so as to change the position of the auricles. This seems like a little thing to write of, but it is these little matters which make up the most of our lives. The auditory canal is about an inch and a quarter long; it extends forward and downward, and is a little higher in the middle than at either end. This is a point to be noted when we come to consider how to get objects out of the ear which do not belong there. The internal end of the auditory canal is covered with a membrane tightly stretched across, commonly called the drum; it resembles the membrane forming the head of a drum—hence its name. This “drum” closes the external ear completely. We sometimes hear of people who can pour water in one ear and have it run out of the other; no one can pour water through an ear unless the “drum membrane” is gone. This can only occur from disease or accident, and, lest it be forgotten further on, we will name some of the ways in which it may be destroyed:

1. Following scarlet fever and measles, there is sometimes a discharge from one or both ears. The disease which causes the discharge will gradually destroy not only the drum, but other important parts, and in time extend to the brain. A child, or grown person with

a constant discharge from the ears, is always in danger. A blow upon the side of the head, or a cold in the head, may kindle up an inflammation that will affect the brain lying just over the ear, and destroy life. The time to cure a discharge from the ear is when it first comes, and it should not be neglected.

2. Boxing the ears is liable to burst the ear-drum.

3. Plunging into the water head first, as boys do in swimming ; the noise of a cannon, especially when standing near and in front of it ; blowing suddenly into the ear, striking the ear with a snow-ball.

4. Boring the ears with a knitting needle, or darning needle, or any hard object, punctures it. Remember it is only $1\frac{1}{4}$ inches from the opening of the ear to the drum.

5. Abscesses in the ear caused by decayed teeth, or anything else.

The purpose served by the drum is to catch the sound-waves, and communicate them to certain little bones that lie in the middle ear. If the drum be broken it will cease to transfer sound, and the hearing will be very imperfect. When we hear a sound, it is because the air is set in motion. Throw a stick in the water it will make rings or waves that circle around it, spreading one after another until they reach the edge of the pond; in the same way, what we call sound is produced by waves of air, invisible to our sight, which strike against the ear-drum, making it vibrate. When we speak we force air out of the lungs; this displaces the next layer of air, that the next, so the air around us moves as the waves move the water. The outer ear is curved in folds to collect these air waves.

The auditory canal is lubricated by a sticky, bitter wax, which keeps it clean, and it is also lined with little hairs. The wax in its natural state catches the dust that floats in, dries up and falls out in scales. The bitterness is a device to keep insects out. Curious to relate, very neat, clean people are more likely to have disease of the external ear than the opposite kind.

Let us see why this is true. People who bathe often wash out their ears; water mingling with the wax softens it and changes its nature; it does not dry up and fall out, but accumulates; then the person screws up the corner of a towel and tries to wipe out the wax. Just for an experiment, coil up a piece of stiff paper the size of the auditory canal, place a bit of lard or tallow in one end, and try wiping it out with a twisted rag; you will push the substance further in, instead of taking

it out, as you will see. Exactly the same happens in the ear; until the drum becomes imbedded in a mass of dry, hard wax, that will not let the sound through. It shuts it out more completely than cotton in the ear. The only part of the ear that needs washing is the auricle, and if water is never forced into the canal it will not get dirty. Let us not forget to add the caution against putting bits of cotton in the ears for any purpose whatever. They are so often crowded down upon the drum without its being suspected that they are still in the ear (as many as three have sometimes been found there), that the only safe thing to do is to leave them out altogether. If the ear needs protection, tie a handkerchief over it. Never under any circumstances drop medicine in the ear for earache, toothache or headache. The ear was not made for a medicine chest, nor for anything except what Nature puts in it; and those who are anxious to preserve their hearing will not interfere with Nature where the ear is concerned.

The *middle* ear lies within the skull; it is bounded on the external surface by the drum membrane, and opposite to this it opens into a

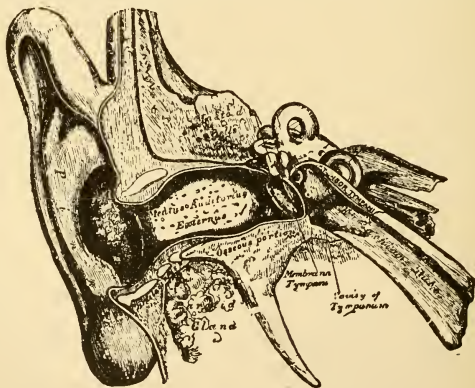


FIG. 7. THE EAR.

Pinna. That portion of the ear standing out from the head.

Meatus Auditorius Externus. The canal leading into the drum.

Eustachian Tube. The pipe leading from the middle ear to the drum. Observe that the drum completely closes the passage.

tube leading to the throat, called the Eustachian tube. There is no tube or opening, even when the drum membranes are destroyed, that leads from one ear to the other. How then can one pour water into

one ear, and have it flow out of the other? We confess we do not know, and do not think it possible, although often assured of the fact by persons who believed they had seen it done. It was probably a trick.

The *internal* ear is the essential part of the organ of hearing; it lies wholly within the skull, and fortunately, being so precious a possession Nature has carefully placed it out of our reach, so that while we can poultice, plug, or medicate the external ear, and even by the aid of the aurist can force medicine into the middle ear, yet the internal ear is safe from all intrusion. The popularity of electricity at present threatens the ear with a new danger. Owing to the close connection with the brain, electricity ought never, under any circumstances, to be applied to the ear except by an aurist, or a physician fully acquainted both with that powerful agent to which we refer, and the proper treatment of the ear itself. It can do no good unless skillfully applied, and is capable of very great mischief.

Disease alone can reach the internal ear; and when disease does destroy its activity there is no hope, so far as is now known, of recovering the hearing. That dread disorder, spinal meningitis, frequently invades the internal ear, and the patient recovers from the illness deaf. Medicines which produce ringing in the ears have been known to destroy the hearing. A man of 30, strong and healthy, until business called him into a malarial country, returned home with the ague. Having little faith in physicians, like many another who has never needed them, he thought he could doctor himself, therefore procured a quantity of quinine from a druggist, and measured out his own doses. He began with a teaspoonful, and increased his allowance for two or three days, taking it while having the chill and during the fever. He awoke one morning astonished at the silence prevailing in the house. He saw that it was late, the children were at play,—he could see their lips move,—but not a sound could he hear. From that time for the remainder of his life he never heard distinctly, even through an ear-trumpet, the voice of wife or child again. Two causes united to produce the injury: first, the excessive doses; second, taking quinine when the system was not in a right state for it. Powerful medicines are none the less dangerous when ignorantly used, because they are common and well known. Familiarity with drugs is quite apt to breed contempt of their power; but none the less do they cause all the injury of which they are capable, when misused. A child that cries when its ears are washed, or

who appears dull and inattentive when spoken to, should be examined by a skillful doctor, for there is probably something wrong with its ears.

Children should never be blamed for stupidity until it has been found that their hearing is not at fault. We recall, in this connection, the case of a girl about ten years of age, who was a source of great mortification to her people, who were very proud, because she was pronounced extremely dull in school, and was far behind her younger sisters. They very seriously considered the plan of keeping her out of school altogether, when a new teacher, who chanced to be a medical student, was employed. The mother determined to give her another trial, and went with her to the teacher, explaining the child's deficiencies, and asking him to see if it were possible to teach her anything. Struck by the attitude of the child when spoken to, he immediately suspected that her hearing was at fault, and proceeded to test it in a simple way, that any one may try. Asking her to fix her eyes on an object in front of her, to hold her hand tightly over her left ear, and to speak when she heard any new sound, he held his watch some distance from her right ear, bringing it nearer, until she exclaimed, "The watch ticks!" Trying it again, he found she could hear it only ten inches from that ear. On testing the opposite ear in the same way, he found she could hear the watch only when it was in contact with her head. Bidding her to close her eyes, he tested her power to hear speech, and found that she could hear, to understand what was said, at only a very short distance; but with eyes open so that she could watch the lips of the speaker, she could understand what was spoken at a much greater distance. The child was shown to be, instead of dull and stupid, unusually quick and observant; otherwise, she could not have lived ten years with her infirmity neither discovered nor suspected. She was placed under the care of a skillful physician, who succeeded in restoring her hearing to an extent which overcame her difficulty in pursuing her studies in school, and banished all appearance of dullness or stupidity.

These three points in regard to hearing should be remembered, especially by those who have charge of children:

1. Slight degrees of deafness, often lasting but a few days, are very common among children, especially after colds in the head.
2. Slight deafness, which does not prevent a person from hear-

ing when he is expecting to be spoken to, will make him very dull to what he is not expecting.

3. There is a kind of deafness, in which a person can hear pretty well while listening, but is really very hard of hearing when not listening.

Some of the common causes of deafness, referring now only to avoidable causes, are the following: Colds in the head; sitting or sleeping with the wind blowing into or upon the ear; railway cars with the window raised spoil many ears. Always face a wind when compelled to be exposed to it. Rain or sleet driving into the ear injures it; wet hair around the ear chills it. Sportsmen, in passing through thorny brush, turning the head suddenly, may force a thorn into the ear and pierce the drum. A school boy has been known to hold a pen near another's ear, and, making him turn suddenly, it has been driven down upon the drum, puncturing it. Sudden loud noises close to the ear may break the drum. If exposed to the noise of bells or musketry, close the ears to shut out the sound as much as possible.

Objects in the Ear.—A tiny insect inside the ear causes a tremendous commotion and intense distress. Immediately turn the head on one side and fill the ear with sweet oil, olive oil, glycerine, or warm water, to suffocate it. It will generally float to the top of the liquid, and can be picked out. Children frequently push hard objects into the ear. Do not be in haste to remove them. It must be managed gently, and be done by syringing. An attempt to pry them out may not only damage the ear, but excite an inflammation that will injure or endanger the brain. Sometimes a fine wire loop, or a loop of waxed thread, can be slipped in beside the object, then over it, and, being gently pulled on, will dislodge it. A syringe and warm water is generally the most effectual. Let the head lie comfortably, with the opening of the ear down; syringe from below. *Do not throw the stream against the object*, but to one side, so that the water passes around behind it and presses it down to the outlet. Do not get discouraged if you don't succeed with the first trial; wait till next day, and then try it again. *Never syringe a kernel of corn or wheat, a bean or pea*; the water will make them swell, and then they can not be removed until the moisture dries out.

Ear Ache.—Don't put medicines in the ear. Hold the head over a basin of hot water to steam the ear, taking care not to burn it.

Bathe the head around the ear with Uncle Sam's Nerve and Bone Liniment, and then apply hot flannel over the ear and side of the head; sometimes a hop pillow heated will be more grateful. A poppy poultice may be prepared and applied as follows: Take a handful of poppy-heads, pour over them enough boiling water to cover them; let them stand in a tightly closed basin for half an hour, strain, press out the water from the poppies and thicken with linseed or corn meal; spread a suitable piece of cloth two inches or more thick, *cover with cheese cloth or thin muslin*, and lay on the ear, muslin side down. This is covered to keep the poultice out of the ear.

Discharges of matter from the ear call for daily cleansing with hot water. To keep it free from a foul odor, add to the water a solution of carbolic acid, enough to give it a faint odor of the acid. A crystal or two of permanganate of potash, just enough to make the water a light pink, will sometimes agree better than carbolic acid. Do not use potash to make the water a dark purple; that will be strong enough to do serious harm. If keeping the ear clean does not very soon stop the discharge, consult a doctor. Never use anything on the recommendation of a neighbor or stranger to dry up the ear. Save all experiments of this character for some ailment that is not so easily made dangerous to life as is a diseased ear.

The middle ear, as we have seen, is connected with the throat by a tube called the Eustachian canal. This tube admits air to the ear, and when closed by disease makes the hearing dull. Sore throat and catarrh sometimes spread up this tube, closing it; this can be treated safely only by a skillful ear doctor. Enlarged tonsils sometimes press upon the opening of this tube, nearly or quite closing it; in these cases the hearing will be improved by curing the tonsils.

CHAPTER VI.

THE EYES.—DEFECTIVE SIGHT.—SELECTION OF SPECTACLES.

The Eyes.—There is no loss that can befall us which is a greater affliction, or attended by more inconvenient consequences, than the loss of sight. It is an alarming fact that while the population of the United States during the ten years from 1870 to 1880 increased at the rate of thirty per cent., blindness during the same time increased over one hundred and forty per cent. Statistics show that it increased in almost constant ratio from north to south, and that it decreased in the same way from east to west. Physicians in charge of dispensaries and charitable institutions are forcibly impressed with the dire results of prevailing ignorance in regard to the care of the eyes. Deeming the subject of great importance, we have devoted considerable space to describing the care needed to preserve them. By far the larger proportion of blindness originates in infancy. If mothers and nurses would throw away all eye-washes, ointments, or salves, keep the eyes clean, and, when they become irritated or inflamed, would consult a doctor immediately, very many children's eyes would be saved which are now hopelessly lost because first seen when too late to save them. It is very strange that people who consult a doctor about the most trivial ailment affecting themselves, will try to treat a disease which is likely to destroy the sight, hearing, or otherwise disable a child for life, according to their own or neighbor's ideas. It is more important that a child have a good doctor than for grown folks; the latter are tougher, and besides, when the growth is complete, Nature will heal most ailments in time, if given a fair chance. Those disorders which make cripples, hunchbacks, develop evil hereditary tendencies, cause blindness, deafness or epilepsy, can nearly always be traced back to infancy or early childhood. "As the twig is bent, the tree is inclined" is as true of the body as of the mind; therefore don't experiment with the children, but

seek advice early when anything serious threatens, or when anything at all ails the eyes, the ears or the brain.

The eyes are the organs of vision. They are placed in sockets within the skull, where they are protected from injury, and occupy a place which gives them the most extensive range of sight. They are connected with several muscles, which turn the eyeball in every direction. For example, one muscle turns the ball inward toward the nose at our will, and an opposing muscle at the same time is put on the stretch by this act; as soon as the will releases the muscle drawing the eye in, the opposing muscle contracts and draws it back, so that we look or see straight before us. Sometimes one of these muscles will become weakened; it can not then overcome the force of its opposing muscle, and the eyeball is turned partially around toward the stronger one. This makes a cross-eye; the direction of the ball may be inward, outward, up or down. Infants who suck their thumb constantly, and watch the hand steadily while they are awake, overtax the muscles which draw the balls outward, and both eyes will be turned inward permanently. A light constantly placed so that a child lying in its crib must turn its eyes one side, or in any other way than straight ahead to watch it, will in time produce cross-eyes. There are other ways in which one becomes cross-eyed; but as these are due to disease they will properly come under the care of a doctor, and need not be described here. The form of the eyeball is olive or egg-shaped; in front of it is set a curved plate of round, hard, transparent material, just as a crystal is set in a watch, and for a similar purpose, to protect the parts beneath, and also to let the light pass through. It is shown in Fig. 8; it is called the cornea, and makes the eye bulge out in front, so that the ball is a little deeper from the front to the back than from side to side. Looking into the eye the first thing we notice is a ring of color called the *iris*, meaning rainbow, so named because of its various color in different persons. It is a little curtain hung behind the cornea to control the amount of light passing through to the sensitive parts behind it. In the center is an opening, which looks black in healthy eyes; this is the pupil. In the back part of the eyeball is a highly sensitive plate or surface, upon which are formed images of objects looked at. It is called the retina. At one time it was thought that a photograph of the retina of a murdered person would be likely to show the face of the murderer as the last image formed upon it. Some very curious experiments were tried, but expectations were not realized. When the eye is

exposed to a bright light, the iris is drawn over the pupil, making it very small; this shuts out part of the light, admitting only what can be borne without injury by the delicate retina. The eye-brows and eye-lashes keep the dust out of the eyes; the eye-lids close to protect them. A watery fluid is constantly being poured out of the tear glands, which lie in the outer corners of the eye. When we wink, this is moved over the ball to wash it; the dirty water is poured out through an opening in the inner cornea of the eye, and runs down through a little tube called the nasal duct into the nose. This is shown at *a*, Fig. 11. Under the influence of grief or other emotion, the water is poured out faster than it can be carried off through this tube, and then it runs over upon the cheeks as tears. Cold in the head stops up the nasal duct; this also makes the tears flow. Catarrh will sometimes close this duct permanently; then the eye upon the side of the closed duct will be watery, reddened, and the tears will flow from it constantly, making a "weeping eye." The surgeon gently pushes a probe through the duct to open it, which relieves the eye. Sometimes it is necessary to keep a small glass tube in the opening to prevent its closing again

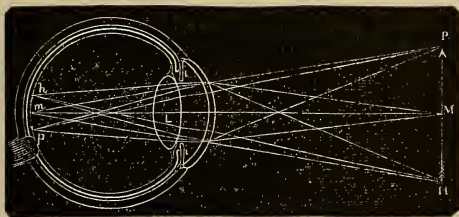


FIG. 8. DIAGRAM OF THE EYE.

- | | |
|---------------|----------------------------|
| C. Cornea. | h. p. Image on the retina. |
| L. Lens. | p. Optic Nerve. |
| P. H. Object. | I. I. Iris. |

The iris is represented contracted, leaving the pupil large. The white lines represent rays of light reflected from the object through the eye to the sensitive retina, where the image is formed reversed, as in the camera. The image is always formed where the rays focus—in this case at *h p*.

A photographer's camera is constructed on the same principle as the eye. If you put your head under the dark cloth with which he covers the camera, and look at the ground glass slide in the back of the instrument, you will see an image of the object before the camera, but

it is upside down. Move the camera nearer the object, the image on the ground glass grows larger; move it away it becomes smaller, but by turning certain screws the instrument may be adjusted so that the image is just as distinct when far away and very small as when near by and large. There are lenses in the eye which are adjusted to different distances by muscles which are under our control. Looking at distant objects we unconsciously adjust our eyes for them, and as instantly adjust them again for those which are close to us. We are speaking now of healthy natural eyes. As old age comes on there is a change in the lenses, so that they are not so easily adjusted for near objects, while distant ones can be seen even better than before, so that in growing old the eyes naturally become far-sighted. After an exhausting sickness, which leaves the muscles very weak, there is often impaired eyesight, due to weakness of the muscles that move and adjust the eyeball. Caution should be given not to over-fatigue the eyes while in this state, for it is possible to bring on actual disease or permanent poor vision by doing so.

Avoidable Causes of Defective Sight.—The practice of reading or doing work which requires close attention, with the light shining directly in the eyes, will soon make them weak. It is said that sailors, who make voyages through the tropics, where they are much exposed to the rays of the hot sun, after a time become unable to see after sunset. The sensitive retina becomes dulled by the bright light, so that subdued light, such as accompanies twilight, will make no impression upon it. The same loss of sensitiveness of the retina is the cause of "night blindness." The brilliant electric light is very injurious to the sight; the strong contrast between the spaces illuminated by the arc-light and the surrounding darkness is so great that it is a hard strain upon the best of eyes. Those compelled to be much exposed to it should wear the glasses that are made to soften the rays of light which enter the eye. They are slightly tinged with blue, giving them a smoky color. Those who work upon objects that require good sight, must attend to the lighting of their bench or desk. Too strong a light, one which dazzles the eyes, an unsteady light, especially if it is sometimes very strong and then suddenly grows dim, or one which is irregularly distributed, causing dark shadows, or that which comes from a wrong direction, all injure the eyes.

A young lady, whose eye-sight was perfect, secured employment in

a city office as book-keeper. She was placed with her desk facing the street, before a large curtainless north window. As the sun did not shine directly into the room, her employer believed the light to be suitable. Unconscious of danger she worked steadily at her books, but in about three months began to be troubled with headaches, coming on during the day and growing worse until night; in connection with the headache she noticed that her sight was growing dim. She consulted a physician, who prescribed the usual medicines for her headache, but without relieving it. Her eyes now became inflamed, and she sought the advice of an oculist. He pronounced the difficulty "eye-strain," and claimed that the headaches were caused by the injury to the optic nerve, which was in a fair way to be permanently paralyzed. She abandoned business, and remained in a darkened room for nearly six months before her eyes were sufficiently restored to read. A year after she resumed her employment she was given a place where the light came over her left shoulder, and by aid of glasses was able to keep at work with no further trouble. Those working on polished surfaces should beware of direct sunlight, as it may be flashed in the eyes suddenly to their injury. Workers with a microscope, if they allow the full glare of the sun to be reflected, have their sight injured. A middle aged jeweler once lost his sight in the following way: He had been accustomed to work before a north window at delicate articles, which required the constant use of the magnifying glass. It is probable that his eyes were over-fatigued, therefore weaker than usual, but he had noticed nothing wrong with them. A mischievous boy at a window across the street amused himself with flashing the light from a lens, or "burning glass," into the jeweler's eyes. After this had been done several times the latter found that his sight was gone. The optic nerve was paralyzed, and he was "stone blind." Those who are compelled to work before a window into which the sun shines directly, can do so safely by placing in front of it a screen of ground glass, or that which is of a grayish white or bluish tint. If you have never thought of the difference which the direction of the light makes, try now, while reading this book, first facing the light in front, then changing your position let the light fall upon the page from over the shoulder; if observant and your eyes are sound, you will notice that the latter is least fatiguing to the sight. The reason why the left shoulder is the one for the light to shine over will be seen on attempting to write with the light on the opposite side—the shadow of the hand will fall upon the paper where

the pen is moving. Light coming from both sides at once is very injurious ; school children are often placed so that cross-lights fall upon their books. Teachers in ill-lighted rooms should arrange tasks so that those requiring the most light may be done when the room is best lighted. Walking up and down a room while reading may, by the change in light and shadows, strain the eyes. Reading under shade trees is open to the same objection. Reading in carriages or on the cars is objectionable, not only on account of the changing lights and shades, but the jarring constantly changes the position of the page, which compels as frequent changes in the adjustment of the eye, tiring it, and, if persisted in, impairing the sight permanently.

Anything which hinders free circulation of the blood through the head injures the eyes. Bending the head over low desks, especially when this position is kept for several hours at a time, is extremely bad for them. Children should be taught to read, write and study sitting upright. Tight neck bands, collars, chains, or strings of beads, the latter especially, when threaded on elastic cord, should never be worn. They press upon the large blood vessels in the sides of the neck, and lessen the flow. Heat injures the eyes ; cooks working over a hot stove suffer from weakness of sight. Their eyes should be frequently bathed in cool water—not ice water, for a chill is quite as dangerous as too great heat. Sewing women, engravers, and others working by a lamp which heats the eyes may protect them without materially lessening the light by placing a glass globe filled with water between themselves and the lamp. A large sponge saturated with water placed beside the lamp moistens and cools the air around it. When the eyes are much exposed to dust (as in threshing, hay pressing, etc.), irritating fumes or anything which reddens them and makes them tingle or smart, they should be frequently washed with cool water: or, if the body be hot and sweaty, let the water be lukewarm, but never hot, except by a surgeon's advice. At bed time it is a good plan to anoint the edges of the lids, after washing out the eyes, with castor oil, almond oil, or even a little pure cosmoline.

Accidents Affecting the Eyes.—*Never rub the eyes when anything is thrown into them.* This is the first thing usually done, but it never should be. Small particles of soot, wood, straw, or dust feel very large when they are under the eye-lids. Grasp the lashes of both upper and lower lids between the thumb and fore-finger, draw the

lids out away from the ball, and the tears will quickly flow ; then turn the head to one side, so they may wash the object out at the corner of the eye. This will rarely fail to remove them if done before they are rubbed into the lids. Blow the nose violently, if the first trial does not succeed. Anything hard does not long remain on the surface of the eyeball, but is soon rubbed off upon the lining of the lid, and will there be found. A strip of paper about a quarter of an inch wide, rolled up in the shape of a lamp-lighter, makes a safe implement to remove objects from the eye which the tears fail to wash out.

Pieces of metal, stone, or thorns flying into the eye may stick in the ball so that they can not be easily removed. Many eyes are lost by unskillful attempts to dig out objects from the ball. Seek the best surgical advice at once, even though the injury may seem slight, and until aid can be had apply cloths wet in cold water, or drop a little castor oil in the eye to allay irritation. While waiting for the doctor, turn up the upper lid and look for bits of the substance; pick them out if they can be found. In Europe talc spectacles are made for the use of stone-cutters and others whose eyes need such protection.

Treatment of an Eye that is Knocked out of its Socket.—This accident happens only when a very severe blow is received, which usually crushes the eyeball. Occasionally it has been knocked out of place without being seriously injured; in these cases the eye can sometimes be saved by prompt attention. If the injury has not thrown dirt upon it (in which case it must first be cleansed), immediately press it back into place, using the greatest gentleness in doing so. Close the lid over it, and cover with a clean folded handkerchief wet in cold water; keep the eye as cool as possible, and apply no other treatment except under the advice of a competent doctor.

Never Poultice an Eye.—We can not make this advice too emphatic. Do not allow anyone to over-persuade you. It needs but a very brief experience in the treatment of eyes to convince one that an army of blind people owe their misfortunes to the almost universal custom of *poulticing everything that is sore*.

The great danger in all injuries to the eye is from inflammation, because this frequently spreads to the sound eye and destroys it also. Penetrating wounds made by pen-knife blade, fork or any sharp instrument, as well as rupture of the eyeball from a blow, may, under skillful care, heal, leaving some sight. The only application that ought

ever to be made to these injuries is cold water on clean cloths. Never take a handkerchief for this purpose, unless it be fresh from the wash; it is not safe to employ one that has been in a pocket, although it has not been used.

Fragments of metal, stone, etc., thrown into the eyeball are most dangerous. It is often impossible to tell whether they have penetrated the ball or not. When the eyeball is merely cut, the object having fallen out, the patient may escape with perfect vision; if it has disappeared inside the eyeball, there is not one chance in a thousand that the eye can be saved, and an even chance that the other eye will be lost from "sympathetic inflammation." Years after the accident an inflammation may suddenly start up, and destroy the sound eye in a few hours. An eyeball with a piece of metal, a shot, a thorn, or any foreign substance in it which can not be removed, is always in danger. Oculists recommend that the injured eye be taken out at once, to save the sound eye.

Children should be trained at an early age to spare each other's eyes in their play. Throwing prickly burrs at each other has been known to prove very serious. We once saw a child's eye literally filled with the prickles from a chestnut burr; it required several hours' patient work to pick them out one by one—the only way to save the eye. A middle aged lady of our acquaintance has suffered from childhood from diseased eyes, which forbid her reading or doing anything that demands good sight. She owes her misfortune to a handful of sand thrown in her eyes by a playmate at school. Bows and arrows, in the hands of young children, are dangerous weapons. The endeavor to rival the famous deed of William Tell, has cost many a boy a good eye. Blows on the eyeballs, that leave no bruise, redness or noticeable change, frequently produce extreme pain and dimness of sight. Blows from corks, pieces of wood, balls, bruises from running against objects in the dark, sometimes cause trouble long after the injury has been received. Such eyes need watching, because there is for a long time danger of losing the sight. Sudden violent exertion, sneezing, coughing or blows may produce "blood-shot" eyes. To remove this condition, apply cold cloths and bathe the face and forehead around the socket with Uncle Sam's Nerve and Bone Liniment. A foolish trick, which once blinded a man, is worth describing here as a warning. He was in company with friends, when some one stepped behind, placed both hands over his eyes, at the same time bidding him to guess who was doing so.

The man could not, or would not guess, and struggling to free himself, the new comer tightened his grasp; the eyes were open, or forced open in the struggle, and the person thus assailed was incurably blinded by the pressure of the assailant's fingers. Occasionally the transparent part of the eye is scraped or wounded by a blow from a switch, or scratch of a child's finger nails, as a baby in arms; it is a serious accident. Until the doctor can be found, keep the eye quiet, darken the room, apply cold cloths; never bandage or use warm applications. Blows over the eye produce "black eye;" if the lids be cut, a surgeon should be seen, so that the wound may be sewed up to prevent an unsightly scar, or destruction of the ball from loss of protection.

A blow on the eye makes the surrounding flesh black and unsightly; the blood settles there, and it takes some time for the little vessels which have been broken to mend, and remove the material which gives the skin its black color. It is said that if the flesh be immediately painted with tincture of cayenne pepper, it will not turn black. After the color appears, the best application is raw beefsteak. Change it every six hours, until the skin looks natural.

Burns on the outside of the *lid* are dangerous, because in healing they are liable to contract, and by their pressure damage the eyeball. Treat as other burns, but always obtain medical advice as soon as possible, to save the sight.

Gunpowder Injuries.—The sight may be destroyed by concussion of the air from the discharge of a cannon. The lids and eyeball may be burned by powder, or grains of powder may be driven into them, producing as serious results as bits of steel or other metal. The grains of powder must be picked out and cold cloths applied; if there is no one willing to pick out the powder, apply cold water until medical assistance can be procured.

Lime in the Eyes.—Do not wash the eyes with water at first, but use vinegar; if very strong, mix with water. This neutralizes the lime and prevents its destroying the covering of the eye. Any bits of lime remaining may be brushed out with a feather or piece of soft paper, rolled up to a point. Whitewash, or lime from mortar, sets up inflammation, which needs a doctor's attention, because there is great danger of injury to the sight. After removing all traces of lime and washing out with vinegar, bathe with tepid water, then drop a little olive oil, castor oil or sweet cream between the lids. The lime may cause the

transparent part of the eye to become dense white, or opaque, which will prevent light passing through; it may make the inside of the lids raw, so that they grow fast to the eyeball; it may change the form of the eye-lid, so that it fails to cover and protect the eye. In all such accidents, skilled attention very early will save many eyes that otherwise would become blind. Lye, caustic, potash, or ammonia in the eye should be treated the same as lime, with dilute vinegar, followed by oil.

Injuries from Acids.—*Oil of Vitriol, Aqua Fortis, Spirits of Salt*, or any other powerful acid destroys the parts very rapidly. Lose no time after an accident in which these acids touch the eye; but, while waiting for a doctor, use any one of the following articles that can be had first: Magnesia dissolved in water, soda, saleratus, lime water, or strong soap suds. *Do not bathe the eye with water until after applying the alkali; it will make the acid eat deeper.* A sample of a mixture to antidote the acid is to take half a tea-spoonful of bicarbonate of soda, dissolve in two table-spoonfuls of water, and pour between the eye-lids; next wash out the eye with tepid water, and drop in oil (never use coal oil in the eye). Scalds from hot water or burns from melted metals may be treated like burns in other parts of the body. While healing, the lids must be prevented from growing fast to the eyeball. Olive oil, glycerine, or, better still, a very good article of cosmoline, or vaseline, worked up under the lids and over the ball, twice a day, will keep it separate from the lids. Dark-colored cosmoline, or vaseline, irritates the eyes.

Care of the Eyes in Infancy and Childhood.—The eyes of infants are more sensitive to light than those of adults. They are less protected against it; the eyebrows are thin, the eye-lashes are short, thin and light colored; the eye-lids are transparent, and the iris incompletely formed; therefore, their eyes should be shaded from bright, strong light. On the contrary, it is not uncommon to find them placed before a window, with the full light of day, or even the sun shining directly upon the face. At night the lamp is placed where it will shine into their eyes. When taken out in their carriage the careless nurse forgets to shade their face, or to protect their heads from the hot sun. Impure air affects the eyes of infants injuriously. The foulness due to lack of ventilation, or the presence of dirty clothes, is even worse than dust and smoke. The steam from washing clothing may be loaded with particles of matter which irritate the eyes as well as the lungs. A

draught, especially if it passes across the upper part of the head, injures the eyes; a chill to the whole body will do the same. An infant is often chilled by cold or damp napkins, or from lying in a cool place with its garments wet. The eyes of the new-born babe should be immediately washed with *clean, warm water, without soap*. It not only has the advantage of removing matter that may cause smarting or pain, but will frequently prevent the most dangerous disease which ever affects the eye, and the one which destroys more eyes than all other causes combined, called by the doctors *purulent ophthalmia*, which is a violent inflammation of the eyes, attended with the formation of poisonous pus, or matter. This matter is so dangerous that the least particle of it carried on the nurse's finger to her eye will produce the same disease in it. Cloths, sponges, towels, employed in cleansing such eyes are unsafe to use around healthy eyes, even after they have been washed. The disease itself has repeatedly been known to attack a healthy eye, and completely destroy the sight within 24 hours. The inflammation usually begins when the babe is from 2 to 5 days old; sometimes it comes on later. It shows itself by redness and swelling of the eye-lids, and by the formation of a thick discharge, which at first looks like white of egg, but a little later becomes yellowish-white matter. At first this discharge is scanty, and glues the eye-lids together as it dries; but it soon becomes abundant and runs out on the cheeks. There is a form of inflammation of the eyes which comes on very much the same way that is not dangerous, and will be cured in a short time by keeping the eye clean, washing it frequently with tepid water or milk and water; but no one, except a doctor, can tell, until too late to save the eye in a dangerous case, whether the babe has the simple or the dangerous form of the disease. Scarcely a week passes in any of our eye hospitals that babes are not brought in after 3 or 4 days of doctoring by grandmother or neighbors, only to find that it is too late to save the sight. Since this disease is found in all communities and every station in life, and as it can not be told at the start how severe it will prove to be, in order to save the sight, which is only a little less valuable than life itself, send for a doctor on its earliest appearance, and until he comes do nothing but cleanse the eyes and keep them cool. *Keep all medicine away from them*. Darken the room, or shade the eyes from sun and lamplight.

To Cleanse the Eyes in Purulent Ophthalmia.—Wash

them out with lukewarm water as often as the matter accumulates; in severe cases this should be done every half hour. To do this draw the lower lid gently down toward the cheek with the fore-finger of one hand, while from the other a slender stream of water is allowed to trickle upon the inside of the lid; catch it with absorbent cotton or sponge. If the case be very bad, the upper lid should be drawn up toward the eyebrow, and water gently thrown under it to wash it; be careful not to press upon the eyeball. When all the matter is washed away, dry the lids by gently pressing a clean old handkerchief or a bit of absorbent cotton upon them. If one eye be worse than the other, do not use the same rag or water for both. The fingers should be carefully washed each time after cleaning the eyes; burn all rags, sponges, etc., used in such a case. Apply pieces of folded linen moistened with cold water, and change them as soon as they become warm. *Do not poultice.*

A violent inflammation of the eye attended by great pain, caused by a blow, a gun-cap or bit of glass, a severe cold, or by anything which injures the eye, must have prompt attention to preserve the sight. A physician should be seen at once. Sometimes it happens that several hours or days must elapse before the patient can get to a good doctor; in such cases, the following lotion may be used. Let a druggist prepare it, using distilled water: Take two grains sulphate of atropine in one fluid ounce of water; place one or two drops inside the lower eyelid, wait one hour, and if the pupil has not grown larger than the one in the sound eye, apply two drops more in the same way. After the pupil begins to grow large, do not repeat the dose oftener than once in four hours. *This is very powerful medicine, and must be used strictly according to directions.* It should be labeled *poison*, and never be used except when no doctor can be had at the beginning of the attack.

Spectacles.—Ordinarily, people with sound eyes begin to need glasses between 35 and 45 years; but there are a great many young people who, from one cause or another, fail to see objects distinctly and continuously, especially when close to them, as in reading or sewing.

Unfortunately they are usually told that there is something wrong with their eyes—some disease of optic nerve, retina or lens, because physicians who have not especially studied the eyes are not always able

to correctly decide between the need of glasses and some forms of eye disorder.

Persons advanced in years uniformly say, when they first begin to need glasses, that they can not hold out to read or do fine work, particularly at night, but that for a short time they can see as well as ever they did. The eyes soon tire and the print mixes and blurs, so that they can not tell the letters apart, but after resting a few minutes they can read for a short time as well as ever; then the mixing and blurring again occurs. The intervals of ability to read grow shorter and shorter, while the periods of repose necessarily become longer and longer, until finally the patient gives up trying to read altogether. Whenever this is the history of the case, glasses are needed for reading and fine work. As a rule, when people can see perfectly at a distance, there is no disease of the eye.

Children sometimes suffer severely from defects in sight, which are not discovered until they begin to go to school, and not always then. We sometimes see a child who has hitherto not suffered with any trouble in vision, begin, with the very first days of school, to complain of its eyes. It seems all at once to have become near-sighted.

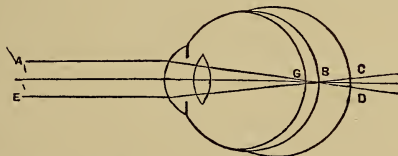


FIG. 9. DIAGRAM OF THE EYE.

- A. E. Rays of light from an object.
- B. The point on the retina of a perfect eye, where the rays come to a focus.
- G. A far-sighted eyeball; the distance of the object A E is such that the rays of light from it can not focus at the retina G, therefore the image is indistinct.
- C. D. A near-sighted eyeball; the image at the focus of the rays of light from the object A E is formed in front of C D, not upon it, and is only seen dimly.

The book is held close to the eyes, distressing and persistent headaches set in, the pain being greatly increased on attempting to use the eyes. To force a child in this condition to remain in school is not merely cruel—it is wicked. Almost invariably such a child is far-sighted, and the effort to focus the eye on near objects causes the trouble. So long as the child does nothing but play, the defect in vision is not discovered, but the attempt to read or study is certain to bring it out.

The eyes of children naturally near-sighted rarely or never become painful when called into use, while those who are far-sighted always do so. In addition to spasms of the muscles about the eyes, all kinds of nervous symptoms may appear, which sometimes become so troublesome as to quite prevent the discovery of their real cause. The first thing to be done is to take them out of school, and forbid the use of books. Apply a flannel bag filled with hops or poppies, and heated by the steam of a tea-kettle, over the muscles to quiet the spasm; afterward bathe them with Uncle Sam's Nerve and Bone Liniment. Let the eyes have rest for a few days or weeks, according to the nature of the case; let the eyes be fitted with suitable glasses, after which the child may return to school without injury.

The choice of glasses is more important than is commonly supposed. They should be strong enough to enable the wearer to see perfectly the objects or print for which they are used; should the eyes tire soon, or ache after wearing them a while, they are not suitable; they are defective when colored rings surround the objects looked at. There are several points to be looked after in selecting a pair of glasses:

1. The lenses or glasses must be clear, and must make the print or stitches look natural, when held conveniently near the eye.

2. They must be set in the frames, so that the center of the lenses correspond with the center of the eyes, and are parallel with the pupils, when the spectacles are worn.

3. The frames should be shaped to fit the head, and stay in place; if they slip down the lenses will not be placed in correct position before the eyes, and, although they may be of excellent quality and exactly suited to the case, the sight will be strained. Eye-glasses are not so good as ordinary spectacles for steady use; the pressure of the springs against the nose interferes somewhat with the circulation of the blood in that region—therefore is injurious. Almost as many people suffer from disorders of the eyes, due to unsuitable spectacles, as from going without spectacles when they are needed. As an example of this the following case is given: A lady of 70, vigorous for her years, was troubled with only one infirmity—that of defective sight. Her eyes were red and watery, smarting so severely, after reading only a little while, that she believed she must give up trying to read. She selected her own glasses, usually from a peddler, and was confident they were good ones. She came to obtain a remedy to allay the pain in her eyes. It

was apparent that her glasses were not right, and she was sent to an oculist for the purpose of having her eyes properly tested. He prescribed the glasses she should wear, and sent her to a first-class optician to buy them. Bathing the eyes with tepid water for a few days removed the redness. Two years have now elapsed; she has used none but her new glasses for that time, is free from any eye trouble, and can read as long as she pleases. It was clearly a case of eye-strain. Undoubtedly there are many old people who suffer in a similar manner, but, believing the trouble is due to old age, that can not be remedied, make no effort to find better aids to sight. The fear of wearing too strong glasses is really unfounded. Formerly glaucoma, a disease of the eyes which causes dimness of sight, was not understood. At that time it was incurable, and resulted in total blindness (it is now curable). Opticians noticed that some people who came to them for glasses returned every two or three months for stronger glasses, and after a time lost their sight. It was not unnatural for them to conclude that the strong glasses caused the affliction, as they were unacquainted with the disease referred to—hence the origin of the prejudice against them. Watchmakers, who wear a lens for hours while doing fine work, are very free from eye disease. They all ought to have poor sight, if the wearing of glasses will produce it. If spectacles are needed at an unusually early age, or if they need to be changed frequently, skilled advice should be sought, to be certain that no serious disease is at work.

Defective Eyes.—Not all eyes are perfect at birth. Some have the cornea more convex or bulging than usual; in these persons near objects only can be seen distinctly; they are said to be “near-sighted.” There are all degrees of this condition, from that which merely prevents one from recognizing friends on the street to the one in which objects must be brought within a few inches of the eyes. Children are occasionally punished as obstinate or stupid, when the trouble is that they can not see. It is difficult for those who are blessed with a good sight to imagine what it would be like to be unable to see small objects at all, and large ones but dimly at a distance of two or three feet. We are, for the most part, unconscious of how much the expression of the countenances of those about us influences us. If we could not see them, we would find it difficult often to interpret their speech. Those whose eyes are defective from birth know nothing of their deficiency in this respect. It is similar in effect to being partially

deaf, so that only the loudest tones spoken directly to us are heard—we should lose a large portion of the conversation carried on around us. If a child be peculiar, dull or stupid, it is better to find out if he be not deficient in sight or hearing, before resorting to the rod, which at best is a questionable quickener of the intellect. It may be necessary for a child of 3 years to wear glasses, and, if necessary, do not postpone their use. A boy of fourteen, who had been pronounced incorrigibly stupid in school, but whose eyes had never been suspected of being at fault, was visiting away from home, where he met a young lady, who wore glasses for near-sightedness. He put them on one day, and was observed to gaze intently about him, as if at something new; after a time he exclaimed, "Why, Nellie, I can see the leaves on the trees; I never saw them before!" And sure enough, it was found that he was very near-sighted, and had but a very indistinct idea of objects around him. Glasses transformed the lad into a bright and eager scholar. It is a common error to believe that short-sighted eyes are good or strong eyes; that short sight improves as old age comes on; that short-sighted people do not need spectacles for reading or near work, if they can see to accomplish it without them. The great danger is that the trouble will increase; therefore, the eyes should be furnished with such aids as will enable them to be employed with the least possible fatigue. The light shining into the eyes, or coming from the wrong direction, will increase short-sightedness. In Germany this subject has been carefully investigated, and it is found that among school children it increases with each grade. There is more of it in badly lighted rooms, and where desks are low, so that the scholars stoop over them. Any thing which injures the health will increase the weakness of the eyes. Short-sighted people need concave glasses, while the long-sighted need convex glasses with which to see near objects.

It is not uncommon for the two eyes of the same person to be unlike in seeing power, especially in those who have a different formation between the two sides of the face. In such cases they need spectacles made on purpose for them, having two different lenses, or glasses of different power, to correct the difference in the eyes and make them see alike.

Mrs. A. was from early childhood a frequent sufferer from attacks of headache, located over and around the left eye. Every kind of headache medicine was given a trial, but in vain. Gradually she began to notice that the headache always followed an attempt to use the eyes

steadily in sewing or reading for several hours at a time, but so long as she did nothing requiring close attention, she was free from headache. Some one suggested that perhaps her eyes were diseased. She had them examined, and a difference was found of between four and five inches in the distance at which she could see distinctly. Glasses made to correct this defect, worn constantly when occupied in work demanding good sight, put an end to her headaches entirely.

CHAPTER VII.

THE BRAIN AND NERVES.

The Brain is the organ of the mind. A sound mind in a sound body is necessary for the highest development of which we are individually capable. There is no part of the body that is independent of the rest; therefore, when one part suffers, all suffer to some extent. It follows, then, that the brain, and consequently the mind, can not be as perfect when the body is the subject of disease as when all the parts are working harmoniously. We are taught that our souls, or minds, live forever, and that our future state depends largely upon the use we make of our opportunities here. Believing this, can one doubt that neglect of the bodily welfare is a sin as distinctly as a neglect of the soul's best interests? It is sometimes claimed that for physical sins we receive punishment in physical pains and suffering; but it may be questioned if the punishment stops here. An abuse of the body which destroys certain parts of the brain, for example, renders the faculties dependent upon those portions of the brain inactive for the remainder of life; the mind, therefore, can not develop in that direction. The use of alcoholic liquors, by hardening certain delicate brain cells, reduces their activity; loss of memory, perverted ideas, dullness of comprehension are common enough among moderate drinkers, to say nothing of drunkards, to prove this. The fact that these transmit defective brains to their descendants, goes far to show that the punishment for physical sins extends beyond a single lifetime.

The average weight of the brain in an adult man is a little more than three pounds. A woman's brain is from five to six ounces less in weight. The brain of Cuvier, the celebrated naturalist, weighed exactly four pounds, while the brain of an idiot seldom weighs more than one and a half pounds. The human brain is heavier than that of all the lower animals except the elephant and the whale. The brain of the former weighs from eight to ten pounds; that of a whale 75 feet long weighs rather more than five pounds. The weight of the brain

increases rapidly up to the seventh year, more slowly between sixteen and twenty, and still more slowly between thirty and forty, when it reaches its largest size. Beyond this period, as age advances, the brain grows gradually less, losing about one ounce each ten years for the remainder of life. A child at the age when the brain is growing most actively should be well fed and guarded from over-excitement, and especially from overcrowding at school. The hardest mental work done by school children should be at the time when both body and mind are at the height of their power, and that is during the forenoon. Night work, to prepare lessons for the next day, should not be permitted. A very safe rule to follow is this : so long as a child rests quietly at night it is not being injured by school work, but when it is restless, talks in its sleep, and especially about its lessons, it should be taken out of school and away from books until thoroughly rested and recruited. We all have a double brain : one part of it presides over our waking hours only ; it produces, or at least makes us conscious of will, of all our wants, and the thoughts that fill our waking hours. The other commands the servants of the body, keeping them at work independently of our thoughts or wishes. In the description of the spine mention was made of the spinal cord, which is a prolongation of the brain substance. There extends from the brain and spinal cord a vast number of small white cords called nerves, which extend to and surround every atom of matter composing our bodies. No doubt you have all seen skeleton leaves, which ladies prepare by dissolving out from forest leaves all the green matter that lies between and among the ribs of the leaves ; if so, you must have admired the delicate yet perfect representation of the original which the finely interwoven, lace-like ribs and veins present. It would be a far more wonderful sight if every part of the human body, except the nerves, could be taken away without changing their position ; so great is their number, and so closely interwoven, that nothing would appear to be missing. All nerves go out from the center in pairs inclosed in the same sheath. Suppose a telegraph cable extended from New York to Chicago, containing two sets of wires, over one of which only the messages from the east to the west could be sent, while only the return messages could pass over the other. This is something like the way the nerves work, except that a totally different class of messages go over the two sets of nerves ; for example, the finger touches a flame and is burned, a message flashes to the brain the signal "danger" quicker than thought, and back goes a message that sets the

muscles at work to draw the finger out of the flame. Those nerves which convey signals to the brain are called nerves of sensation; those bringing the return message, nerves of motion. All parts of the body exposed to external injury are provided with both kinds of nerves, but these have other uses than to guard us from danger. Every conscious effort we make is accomplished through them. If we wish to walk the nerves of sensation notify the brain, the nerves of motion set going the muscles which enable us to move. Sometimes the connection between the brain and a group of these nerves is interfered with. A familiar example of what follows we have probably all experienced—that is, we have had the “foot-go-to-sleep.” Sitting in an unusual position, so as to partially stop the flow of blood to it, is the cause; the nerves are also stunned by pressure; the foot for the instant is paralyzed, and on attempting to move it there is no power to do so—it feels like a dead weight. After moving the foot a little the blood begins to circulate more freely, there is felt the most intense agony for a moment as the nerves wake up.

Instances are known where drunkards have produced permanent paralysis of one arm, by laying the head upon it during a long drunken sleep. Paralysis is a loss of power. It may be due to something wrong in the brain, which prevents it from sending out messages or recognizing the signals. This is the case after an attack of apoplexy, in softening, and some other changes in the brain substance: paralysis may be due to disease of the spinal cord, which interrupts the message on its way to the brain; again, it may be due to an accident which has severed the connection between the nerve and the spinal cord or brain; instead of being severed, pressure on the nerve at some point may interfere with its work; this is seen when tumors grow in such a way as to press on a nerve-branch. Another curious thing about the nervous system is that one nerve of a pair, starting from the same root, may be out of order, while its mate works perfectly. A nerve of sensation may lose its power; then the part which it supplies may be scratched, burned or bruised without exciting pain, while it can be moved about as well as ever; again, it may be the nerve of motion that is powerless—then, while the part can not move, it feels anything that touches it, the same as usual. The varieties of paralysis arising from disordered nerves are almost innumerable. The subject is only hinted at here for the purpose of introducing this fact, which is of the utmost importance to thousands of people every year—for some forms of paralysis are much more

common than the public imagine. It is this: medical advice should be sought in every case of paralysis, no matter how slight. Don't wait to try electricity, nor any medicine, no matter how many people it is reputed to have cured; there is, unfortunately, plenty of time later to indulge in experiments in these cases. Almost all the disorders which produce paralysis (for it must be remembered that paralysis is only the symptom of disease, not the disease itself) can be alleviated if seen early enough. In a few cases any treatment of the paralyzed part by rubbing, electricity, or the vacuum plan, before the origin of the trouble is removed, will produce a new, severe, or even fatal attack. If, on the other hand, the patient is left too long without treatment of the paralyzed muscles, they will waste away, and make the case hopeless so far as recovering the use of the disabled part. Paralysis of infancy is especially important, because if nothing is done the paralyzed member will fail to keep pace in growth with the rest of the body, and deformity will be the result.

Pain is the cry of a nerve for help. It may be caused by anything that directly injures the nerve itself, but quite as often it means that some organ which the nerve controls is in danger. Again and again the cry is repeated; if no help is given it tires of calling in vain, and after a time ceases altogether. It is correctly considered a very bad sign when pain ceases, and the disease progresses; it very soon proves fatal after this stage is reached. There are two ways of treating pain. The one is: to give opium, morphine, chloral, or some other drug which acts on the nerve, stunning it or putting it to sleep, as the case may be, so that it can not cry out. This plan is so popular with the sufferer that many physicians content themselves with this way of treating every case where pain is present. The other way is to seek the cause, remove it, when the nerve ceases to cry. In the former the disease goes on, and as soon as the effect of the drug passes off the nerve tries again to sound a warning, but is again promptly silenced. This goes on till, in many cases, the patient is destroyed, or slowly recovers a confirmed opium-eater or chloral-taker, in bondage for the balance of life to a drug that destroys both mind and body. This is a fact that any physician will confirm—*there is no medicine that will quickly quiet pain but that has the power of making those who take it its slave for life.*

One of the most celebrated living French physicians recently stated in public that he has seen so much harm done by opium,

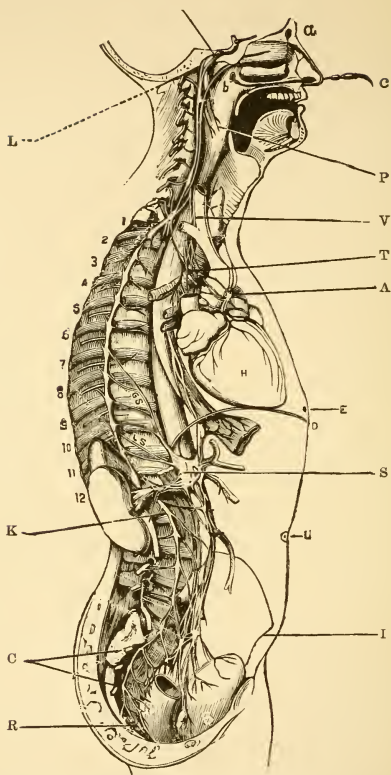


FIG. 10. SIDE VIEW OF THE CAVITIES OF THE BODY.

L. Base of skull, where the spine joins it.

K. Kidney.

C. Bones forming lower end of spine.

R. Rectum cut off at the top.

P. Pharynx, or throat.

V. Large blood vessel carrying blood to the brain.

T. Right branch of Trachea.

A. Upper part of Left Auricle.

H. Heart.

E. Lower end of Breast Bone.

a. Nasal duct.

b. Opening of Eustachian canal.

c. Instrument inserted through the nostril and into the Eustachian canal.

D. Diaphragm.

S. The large group of nerve-roots that govern the organs of the abdomen, sometimes called the abdominal brain.

U. Umbilicus, or Navel.

I. Hip bone.

B. Bladder.

The spine is removed in this figure, showing only the spinal cord. The figures 1, 2, 3, and up to 12 mark the ribs. The fine lines are nerves.

The group S lies immediately behind the stomach; the pressure of a stomach filled with food, when a person who has just eaten heartily goes to sleep on his back, hurts these nerves; they retaliate by sending messages to the brain that cause the frightful dreams common on such occasions, and the worst forms of night-mare.

morphine, laudanum and the various other forms of opiates, that he never under any circumstances prescribes them except to patients suffering from incurable diseases. It would be well if all physicians this side of the ocean were as scrupulous in their regard for the well-being of humanity.

CHAPTER VIII.

THE ORGANS OF LOCOMOTION.

The feet are an essential part of the organs of locomotion. Much of our comfort, and not a little of our health, depend upon our foot covering. The present method of dressing the feet distorts them, besides giving rise to a vast amount of misery. A shoe well adapted to the foot of the wearer will not be uncomfortable when first worn, nor need "breaking." The difficulty is that common soles are curved on the inside line, where they should be straight, which draws the great toe to one side and all the toes too closely together, pushing out the joint, creating corns between and outside of the toes, and soreness of the joint itself. This tendency is increased by straight and narrow-toed soles, made worse by high heels, which pitch the foot far forward; wearing shoes which are too short also makes trouble in the same direction.

The feet are naturally made in the shape of an arch, because this is the strongest form of support, and the foot must support the whole weight of the body. They are also curved in outline; in a natural foot (very few of them are to be found), a straight line marking the center of support will pass from the center of the heel to the ball of the great toe. The majority of shoes and boots have a sole shaped so that this central line passes beneath the middle toe. They should always be "rights and lefts," to correspond with the natural curve of the foot. The sole ought to be as wide as the foot. Well-fitting shoes are essential to an easy, graceful step; those who have always worn stiff, clumsy foot gear have an awkward gait. During natural walking, all the muscles of the foot and leg are brought into play; if through stiff shoes, high heels, or other defects of foot covering, any of these muscles are interfered with or cramped, they do not develop perfectly. If the soles are stiff enough to prevent the bending of the foot, there can be but little use of the muscles forming the calf of the leg, and which raise the heel; consequently, the calf remains weak and undeveloped, instead

of presenting a full, round muscular appearance, which is necessary to a light, easy and elastic step. Mothers should begin to look after their children's feet as soon as they are old enough to wear shoes. These should be heelless, long and broad enough. Too short shoes press the great toe backward; this throws the great toe joint out prominently on the inside of the foot, producing an enlargement or bunion, and sometimes curves the toes or makes them club-shaped. Too narrow soles draws the toes together, or, pressing one or more under the rest, makes a deformed foot. The friction of the toes rubbing against each other starts soft corns between them. High heels sometimes produce curvature of the spine, and in growing girls, who are particularly apt to wear them, other more serious troubles. The old-fashioned *short heels* produced a broken-down arch, or flat foot. A long (not high) heel is excellent for a flat foot, and is the next best thing to no heel at all, as it supports the arch most nearly as it is supported when the bare foot is pressed upon the ground or floor.

Other defects in foot covering produce calloused spots on the heel or instep, turning of the foot over to one side, which runs the upper of boot or shoe over the sole, and neuralgic pain in the feet. A shoe with a curve unsuited to the foot will sometimes strain the ankle severely, producing lameness. Loose boots that allow the foot to slide forward, or the heel to slip up and down, are as bad as those which are too tight. Hard or stiff leather is another quite as frequent source of painful feet as anything we have named; it is equally bad, whether the boot be tight or loose. Large wrinkles over the joint sometimes make it painful and produce a corn. Some of the qualities which are essential to a perfect foot covering are the following:

It is made of the right shape for the foot upon which it is to be worn.

It is just snug enough to confine the foot, without exciting any uneasy feeling.

The foot goes in easy and naturally, and is not straightened out of its natural curve.

There is length, to allow the toes to move and extend in walking, without pressure upon the nails.

There is width, to let the toes lie side by side, without overlapping.

The space is entirely filled, while at the same time the foot is

easy, and can spread out as the weight of the body is thrown upon it, without exciting pain.

If the shoe spreads out, so that the uppers overrun the sole, it is not wide enough, or is not the right shape.

Corns and Bunions.—Common corns are produced by the chafing and pressure of the foot against the leather of the boot, or by crowding the toes together. The cuticle grows thick and hard in the effort to protect the true skin. You will remember, in describing the skin, the outside (scaly) layer is called the cuticle. This is the material from which the nails, hairs, dandruff, etc., are made. The thick skin on the sole of the foot, and the calloused place on the hand, are formed of the cuticle. It has no feeling, is horny and hard; it possesses the peculiar property of becoming thicker under a moderate amount of pressure or rubbing. The true skin beneath it is a network of vessels and nerves, all ending in a little loop; each loop contains a blood vessel and nerve. If you examine a piece of sole leather, the part called the grain represents the cuticle, the thicker portion the true skin.

If the true skin be irritated by pressure or friction, the minute loops will grow longer; the cuticle at the same time grows over them, forming warts upon the hand or corns on the feet. If the loops of blood vessels are enlarged, they look like red points and give the name "seed warts," "seed corns" to these excrescences. The pressure of the boot hurts the sensitive loops more at one point than another; here the cuticle will form thicker, becoming dry and hard, and causing pain by pressure on the nerves.

This kind of corn can be cured only by burning out the roots. Corns which form between the toes are soft, because kept constantly moist with perspiration. Those forming on the sole of the foot or the ball of the great toe cause the greatest suffering, because any attempt to walk presses hard upon them. They are caused by some unevenness of the boot sole, by a peg, or by wrinkles or seams in stockings. Sometimes the darning of stockings makes thicker patches; the pressure will be greater over these, and they will produce corns. Passing the fingers carefully over the boot sole on the inside will reveal a prominent point where the corn on the sole of the foot comes in contact with the boot. This is sometimes so slight as not to be easily detected. The composition or patent soles are most liable to have an irregular surface after they are partially worn out. To preserve the corn from pressure use felt soles in the boots, with a hole cut out corresponding

to the situation of the corn, or use several layers of old linen covered with cosmoline in the same way. Ordinary hard corns, when first formed, may be cured by soaking the foot in hot water softened with lye or soda for fifteen or twenty minutes, then scraping off the callous skin and prying out the corn with a pen knife; use a dull blade; do not cut beneath the skin. *The whole secret of a permanent cure is to remove the cause.* A frequent question asked the corn doctor is: "Will this corn grow again?" We can reply that invariably it will grow again if the same foot covering is worn as before.

Treatment of Corns.—There are many ways of curing corns; but as the remedy which fails in one case may succeed in another, several of the best modes of treatment are given, that the reader may have a choice:

1. The chiropodist uses a small knife, made on purpose, for removing corns. When the corn is fully ripe, a membrane separates it from the true skin, so it can be peeled out without injuring the true skin. Nitro-muriatic acid or aqua regia is the ordinary secret remedy of "corn curers." (*It is a violent and dangerous poison, and should never be handled carelessly, left in the way of children, or spilled on the skin*). They apply a little to the corn with a glass brush, or a soft pine stick; afterwards they "elevate the grain" on the point of a pen-knife.

2. Take a thick piece of soft leather, larger than the corn; punch a hole in the center the size of the top of the corn, spread the leather with adhesive plaster, and apply it around the corn. The hole in the leather may be filled at bed time with a paste made of soda and soap. In the morning remove the plaster, and wash the corn clean with warm water. Repeat this several nights, and the corn will disappear. The only precaution is not to repeat the application to produce pain.

3. This method will permanently remove the worst corn, provided that only soft, perfectly-fitting stockings and boots are worn. During the day apply felt or sticking plaster, having a hole in the center for the corn to project through. Before applying the plaster in the morning, rub the corn with Uncle Sam's Nerve and Bone Liniment. At night rub it with strong soft soap for several minutes—then soak it in warm water for some time; afterward scrape off with a blunt knife all the soft, pulpy matter outside the corn, but stop scraping the moment pain is felt. Apply the same liniment as in the morning. Keep this

treatment up from ten days to two weeks. If discontinued too soon, the corn will grow again.

4. When a corn keeps reappearing after being removed, touch the central point only, with nitric acid or caustic, but do not apply when the corn is very sensitive. Corns on the bottom of the foot nearly always need a caustic to completely remove them. They may be greatly softened by binding on at bed time a pad of cloth saturated with a penetrating liniment. Sometimes a slice of bacon bound on will answer the purpose very well.

5. *Soft corns*.—Dissolve a piece of ammonia the size of a bean in an ounce of water, and apply hot. Another way to treat them is to wash them clean, and then apply glacial acetic acid—a very small amount on a soft pine stick or a cork. Be careful to let none of it touch the sound skin, and separate the toes with a bit of cotton. Repeat this every night at bed time. If it makes them sore or inflamed, omit it until they are better.

Inflamed and maturing corns need to be opened. An old or feeble patient must not use caustics, neither should their corns be cut. Blood poisoning and death have been known to follow a neglect of this advice.

Inflamed bunions are greatly benefited by warm foot baths and applications of tincture of iodine. Paint it over the bunion once a day; open it when matter forms. Uncle Sam's Nerve and Bone Liniment removes the inflammation. It should be applied on a sponge or linen cloth saturated with it, and bound on all night. Sore insteps, enlarged joints and corns can be relieved from pressure by having shoes made over a last which is provided with leather bunches over the parts corresponding to the tender places on the feet.

An Ingrowing Nail is another trouble caused by too short or too narrow shoes. Soak the feet a long time, until the nail as well as the flesh is softened; take a piece of glass or a dull knife blade and scrape the nail lengthwise down the center from the end to the root, thinning a narrow space about an eighth of an inch wide, almost down to the quick. This destroys the arch of the nail, and when pressure narrows the toe the nail will be thrown up in a ridge along the center, instead of being pushed down into the flesh at the corners. If the nail has begun to grow down take a wooden tooth-pick, dip it in pure crystalized carbolic acid, melted by heat; then press it down deeply between the nail and the flesh. This cauterizes the flesh, turning it white as if

scalded. A few hours afterward soak the feet in warm water, and try to trim off and pull out the edges of the nail. If too painful, apply the carbolic acid as before and wait again. This is tedious, but not as severe as to have the nail pulled out by the roots, as the surgeon sometimes has to do in very bad cases. After removing the edges of the nail, dress the raw surface with Uncle Sam's Nerve and Bone Liniment.

Chilblains are caused by frost-bites. To allay the terrible itching bathe with Uncle Sam's Nerve and Bone Liniment. If the skin be broken apply an ointment spread on linen, made of sweet mutton, tallow and prepared chalk; stir them together while the tallow is warm. Zinc ointment as prepared by the druggist is useful for old ulcerated chilblains.

Cold or damp feet are very damaging to the health. Stepping out of a warm bed upon a cold floor or oil cloth sends chills all over one who is strong; such an act endangers the life of those who are weak or delicate. Soaking the feet in hot water at the beginning of a cold relieves the oppressed breathing, and soothes the irritated membrane of the throat and nose; the comfort it gives is so marked that the hot foot bath is an almost universal remedy for a cold at its commencement. The blood drawn into the feet starts up the circulation, which is always made slower at first by the shock of a chill; the heat of the water helps replace that which has been lost; the pores open under its influence, free perspiration unloads the system, and the cold is cured. It is only when taken at the start that the hot foot bath accomplishes this. The effect of cold feet due to feeble circulation is no less serious because it does not produce the immediate effect that a sudden chill does. So perfectly is the circulation of the blood through the body adjusted, that any interference with it affects every part. Each heart-beat moves forward every atom of blood in the body. Suppose the vessels in the leg are compressed by tight garters (and any garter that will hold the stocking up must compress these vessels), the blood propelled by the heart to that point partially rebounds as it meets the obstruction; this affects the whole column of blood back to the heart itself, and causes a strain on the valve that in time weakens it. If there be weak points in the blood vessels, there will be a gradual giving away at those points, producing piles or aneurism, according to the location. Notice that it is not claimed that tight garters alone are responsible for heart disease, piles or aneurism. This illustration of obstruction was selected because a familiar one; it is seldom that they are snug enough to produce the worst effects from interference with

the circulation, but they do give rise to cold feet, to swelling of feet and limbs below the knees. The feet are never cold except when there is inactive circulation through them, therefore less blood is being carried to them than usual; there is about the same amount of blood in the vessels at all times, and therefore if there is less in the feet there must be more collected elsewhere—in other words, the equilibrium of circulation is disturbed, so that wherever you find cold feet you will find congestion, or an excessive amount of blood somewhere else in the body. Obstruction may exist at many points; it may be from an accumulation of fecal matter in the bowels, from overloaded stomach, from tight clothing; whatever it may be it checks the force with which the blood is sent onward from that point through the veins; the latter are apt to grow knotted, and gradually enlarge forming varicose veins, or congestion of some internal organ. The feet naturally perspire easily and freely; the covering must permit the escape of moisture as it is evaporated. Water proof boots confine the moisture, and when worn day after day the feet become water soaked, making them tender, and they blister easily.

Rubbers should be removed when sitting in the house. The feet should be bathed in tepid water after being soaked in perspiration in rubber boots. Uncle Sam's Nerve and Bone Liniment is an excellent embrocation to remove any soreness. Cork soles covered with wool or flannel, worn inside rubber boots or overshoes, help to keep the feet warm. Rubber boots become very foul after they have been worn some time; the sweat adhering to them becomes a breeding place for bacteria, making them unfit for wear. This may be remedied by washing them out occasionally with *carbolized water* (see appendix for method of preparing). During cold or rainy weather woolen stockings are the healthier worn with leather boots and shoes. Fleece-lined cotton hose are the best substitute when woolen can not be worn.

Fœtid Feet.—Occasionally persons are met with who are afflicted with a most offensive odor of the feet. This is not always due to lack of cleanliness, but is a disease. Treatment: Dissolve a lump of alum the size of a walnut in a gallon of hot water. Bathe the feet with soap and water, and afterwards soak them in the hot alum water for half an hour. Have ready clean stockings and a new pair of boots that have not been worn before, to put on after the first treatment; until cured do not put on any leather foot covering that has been worn before. Repeat the alum bath every night. It takes about a fortnight to effect a cure.

CHAPTER IX.

BUILDING AND REPAIRING.—DIGESTION, AND THE INFLUENCES WHICH MODIFY IT.

The process of building up our bodies, and keeping them in repair, is a complicated one. Our part of the work consists in supplying food, drink and fresh air in sufficient quantity for the servant's use. There are needed not less than ninety different elements to construct all the parts of the wonderful structure which forms the "temple of the soul." Nature can not make *something* out of *nothing*; therefore, if we fail to furnish sufficient material, we must expect some portion of our body to be defective, and poorly repaired. On the other hand, certain materials must be furnished sparingly, just enough, no more; for our servants are economical, and always ready to lay up a store against "a rainy day," when they have anything to spare. Our store-room is limited; for example, most of the excess of starchy foods becomes fat that, beyond a moderate accumulation, is a burden. Excess of salts, especially in the aged, is deposited around the joints, in the blood vessels, and elsewhere, interfering with the movement of the joints, and the circulation of the blood.

Digestion is the process by which food of every variety is transformed into blood; the work is carried on in the alimentary canal, which extends from the lips to the anus. It is about thirty feet long, and is lined with a soft, fine membrane, resembling that covering the lips and mouth. The business of changing a mouthful of food into blood includes grinding, soaking, softening, churning, and a great variety of chemical work, so complicated in its nature that if we were compelled to give our attention to it, keeping up the fire, supplying water and the necessary chemicals just when they are needed, removing the wastes, and distributing impartially the elements separated and prepared by digestion, it would leave us no time for the affairs of life; we should be in the condition of a machine which expends all its force keeping itself in running order, therefore useless for any practical purpose. Digestion

begins in the mouth; it is important that the work done in the mouth be thorough—that is, the food ought to be chewed slowly to grind it fine and mix it well with the fluids which accumulate there. *All food should be thoroughly chewed.*

You must have noticed how the “mouth waters” when anything smells particularly good to eat; this water is the saliva, or spittle, formed in the salivary glands. There are six of them: one in each cheek, one under the tongue on each side, one behind and below the lower jaw on each side. They are capable of pouring out $3\frac{1}{2}$ pints of saliva daily; do not imagine that this large amount of fluid is stored in the cheeks and under the tongue—it is made as it is wanted. The sense of smell sends a message to these glands that food is to be taken, therefore saliva is needed; they immediately respond by drawing the materials of which it is made from the universal store-house—the blood—and pour it into the mouth. There it moistens the food, softening and lubricating it to fit it for swallowing; but it does more than this: it begins the work of turning all starchy portions of food into grape-sugar, the only form in which it is of any use to the system. Those who bolt their food throw additional labor upon the stomach, which not unfrequently proves to be the “last straw.”

The Method of Conveying Food to the Stomach.—The mouth is bounded behind by a movable curtain called the soft palate; when a morsel is ready to be swallowed, this curtain is raised up to close the openings into the nose, that lie directly behind it; the valve which guards the windpipe is pressed firmly down, the morsel glides over it, back into the opening of the gullet (œsophagus); it does not slip down at once, but is caught by the muscles at the top which press it down, little by little, until it reaches the entrance to the stomach. It is not because we are sitting up that the food goes down; we could swallow, standing on our head. The way the food is grasped and pushed downward by the muscles may be observed in the neck of a cow or horse, while drinking with the head down. When the throat is swollen, in consequence of a cold, the soft palate will sometimes fail to cover the nasal passages completely, then a crumb may be forced up into them in the act of swallowing; this produces intense distress, with violent cough, until it is forced out. A crumb, or coffee grain, falling into the windpipe, will almost strangle one; in rare cases it may be driven into the opening of the Eustachian tube, causing intense nervousness with almost constant attempts at swallowing; this accident

has been known to bring on spasms. When the throat is in this condition, it is better to take nothing but liquid food, milk, broth, porridge, and the like, until the swelling has gone down. The length of the œsophagus is about nine inches; at its lower end it joins the stomach, as shown in Fig. 11.

The Stomach.—The Scotchman's bag-pipe is made of a pig's stomach; ours is like it in shape. It varies considerably in size; in an adult, when moderately full, it measures twelve inches across from side to side, and is about four inches deep. In the case of gluttons it has been known to attain an enormous size, extending down to the lowest part of the abdomen, and entirely across the front of the body. Ordinarily it is full when it contains a gill, but will easily hold a quart; both stomach and intestines are capable of stretching out to hold a much larger quantity than usual. As the lungs expand, it is pressed downward by the diaphragm; as they contract to expel the air, it rises. Its position varies according to whether it is full or empty. It lies to the left, in front of the spleen, when empty, and is covered by the left lobe of the liver. The under surface of the heart lies just above and a little in front of it, with the diaphragm and liver between them (see Fig. 12). This position of the heart explains why neuralgia of the stomach is supposed by the sufferer to be located in the heart, and why it is accompanied by palpitation and irregular pulse. The diaphragm is pushed upward by a full stomach; this narrows the cavity of the chest and gives rise to difficult breathing, which troubles many people directly after eating. Tight lacing pushes the stomach downward, therefore it can be filled only as it crowds the organs of the abdomen out of the way, making the latter more prominent than natural, and indirectly producing serious displacement of some of the organs. The wall of the stomach is made of three layers of muscles; the fibers in the outer layer shorten it as they contract; those of the middle layer go around it making it narrower; the inner layer contracts it obliquely, drawing the wall down firmly upon the contents. These muscles are constantly contracting and relaxing, when there is food in the stomach, keeping up a churning motion. The stomach is in all respects a second mouth: it has lips that open to admit and close to retain the food which the muscles of the throat, like hands, present to it; the food is rolled from side to side, till it is thoroughly mixed with the gastric juice, which is secreted by little glands located in its walls, just as the saliva is secreted by similar glands lying within the cheeks and beneath the tongue.

When the work of the stomach is complete, its contents are propelled onward and out of it, very much as the food is carried from the mouth to the stomach in the act of swallowing. To make the parallel complete,

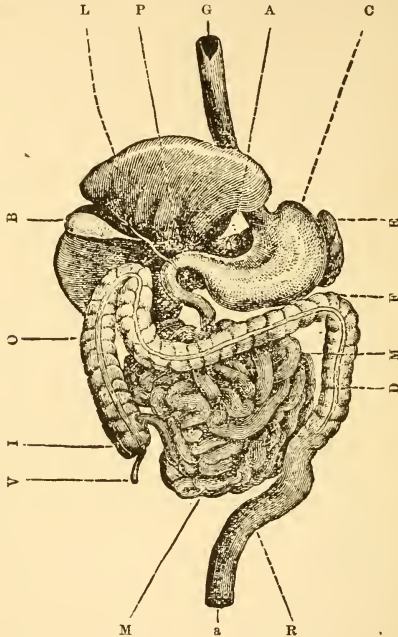


FIG. 11. DIGESTIVE ORGANS.

- L. Liver turned up to show the stomach behind it.
- C. The cardiac, or large end of the stomach, which lies nearest the heart.
- P. The pylorus, or lower opening of the stomach. This is the part where cancer is most frequently located.
- G. Gullet, or oesophagus.
- A. Pancreas, or sweet bread.
- E. Spleen, or milt.
- B. Gall-bladder. The tube connecting this with the intestine just below the pylorus is sometimes closed by catarrhal inflammation, which prevents the flow of bile from the gall-bladder; it then becomes thick, and forms into round masses called gall-stones.
- O. Ascending colon, or large intestine, passing up along the right side of the abdomen.
- F. Transverse colon, bent down to show the connection of stomach with intestine.
- D. Descending colon, passing down the left side of the abdomen.
- R. Rectum, or lower end of the intestines.
- a. The anus, or external opening of the bowels.
- M. Small intestine.
- I. Caecum, or blind end of the large intestine.
- V. Worm-like attachment to the caecum. It is a small hollow tube, the use of which is unknown—if it has any. Cherry stones and grape seeds have been known to lodge in it, and produce an abscess that destroyed life in a very short time. It is difficult to detect this trouble during life.

some animals—not man—have teeth in the stomach. The amount of gastric juice formed in the stomach of an active, healthy man, weighing 140 lbs., is about 37 lbs. each 24 hours. At first thought this seems incredible, because it greatly exceeds the weight of blood out of which it is taken; but when we reflect that only a few ounces of gastric juice is present in the stomach at any time, that it is re-absorbed as soon as digestion is complete, and that it is continually being secreted and absorbed, the estimate is probably not too great. This subject has been thoroughly studied in connection with persons who, in consequence of an accident, have had a permanent external opening in the stomach through which the work of digestion could be watched from beginning to end. Healthy gastric juice is a clear, colorless fluid, inodorous, a little saltish, and very perceptibly acid. It is powerfully antiseptic, checking the putrefaction of meat, destroying disease germs and worms, and is very healing to ulcerated surfaces. The substance which gives gastric juice its peculiar power may be separated and dried, forming a grayish mass, which is called pepsin. A similar substance may be obtained by soaking in water the lining membrane of a pig's stomach, or the fourth stomach of a calf. A small portion of pepsin dissolved in water, or the solution obtained by soaking rennet with the addition of a few drops of the acid of common salt (hydro-chloric acid), or that which is found in sour milk (lactic acid), forms an artificial gastric juice that will dissolve meat, or bread, or other articles of food. One part of pepsin dissolved in 60,000 parts of water containing a few drops of acid will have this effect, if kept at about $98\frac{1}{2}^{\circ}$ —the temperature of the body.

The secretion of gastric juice is affected by various circumstances. Cold water renders the lining of the stomach pale for a time, and diminishes the secretion, but this soon returns more freely. Ice, however, in large quantities, checks it for a long period, as also do alcoholic liquors, all kinds of irritating agents, like powerful medicines and highly-spiced sauces. Anxiety, anger, or vexation frequently diminish or altogether suspend the supply of gastric fluids, and, occurring at the commencement of digestion, even if temporary, they retard the entire process. Anger can cause an influx of bile into the stomach; this fluid puts a stop to the action of the gastric juice. The work of the stomach is complete when the food has been transformed into a grayish mass, called chyme. During the time when this is taking place, the muscle which guards the lower orifice of the stomach at the pylorus selects the

fluids and allows them to pass through, but refuses the more solid portions until they are changed into chyme, or until a sufficient time has elapsed to complete this change; then everything is allowed to pass out of the stomach to the upper part of the intestine, where it is mixed with bile, and the juice formed in the pancreas (sweet bread). These fluids have an important work to do before the chyme is ready to serve its purpose.

During the entire period of stomach digestion the food is churned about and kept constantly in motion, the walls of the stomach contracting down upon it as the quantity diminishes. When additional food is taken before digestion is finished, the new portion is carried into the center of the mass; but it is liable to interfere with the work setting up fermentation with acidity, the formation of gas and other symptoms of dyspepsia.

The length of time required for food to be thoroughly disposed of varies with the kind, the individual and other circumstances—such as repose or excitement and condition of body. Vegetables are generally slower of digestion than meats and starchy substances. Tables have been prepared showing the average time required for the principal articles of food, but are of little value, owing to the numerous exceptions to them. An ordinary meal of mixed diet, animal and vegetable, requires from four to five hours for complete digestion.

Since the gastric juice is capable of dissolving nearly all organic substances, the question arises, Why does it not dissolve the walls of the stomach itself? It does so after death, if any remains in the stomach; it was formerly believed that the gastric juice can not attack living objects, but this has been disproved in the following way: Frogs have been fastened in the stomach of animals in such a way that the hind legs were enveloped in gastric juice; they were digested while their owners were alive. It is clear, then, that the presence of life is not sufficient to account for the protection of the stomach, and so far no reasonable explanation has been offered. Just what purpose the bile serves, is still a question upon which physiologists are not agreed. Some of its uses are known, but not all.

Dr. Dalton tried the following experiment to determine the effect when bile is prevented from mingling with the chyme: Two dogs were the subjects. The gall duct was opened, so that the bile should flow out externally. The symptoms were constant and progressive loss of flesh, until every trace of fat disappeared from the body. The loss

of flesh amounted, in one case, to more than two-fifths; in the other, to nearly one-half the entire weight of the animal. There was also a falling off of the hair, and an unusually disagreeable odor in the breath. Notwithstanding this, the appetite remained good; digestion was not essentially interfered with. There was no pain, and death took place at last by simple, gradual failure of the vital powers.

Languor and debility are common when the supply of bile is lessened, or is not extracted from the blood as needed. The quantity formed daily in an active adult is from 3 to 4 pounds. The chyme is gradually changed into chyle by the various fluids added to it after passing out of the stomach. Chyle closely resembles in color, smell and consistency sweet milk. It may be truthfully said that the diet which nourishes mankind from the cradle to the grave is milk, and milk alone, because every particle of food must be made over into this form before it can be mingled with the blood.

There are muscles in the intestines that alternately contract and relax, giving them a peculiar motion, which is called vermicular, meaning worm-like, because it resembles the movement of a worm in crawling. As they contract, the chyle is pushed forward and squeezed into little tubes located in the inner coat of the intestines. These are lacteals (milk vessels); they carry the chyle into glands, in which about one-half becomes corpuscles, or blood-disks; it is then collected, carried up to the neck and poured into a large vein, where it is mixed with the blood and carried on into the heart, from whence it is sent to the lungs, where occurs the final change which makes the chyle into blood. This work is very imperfectly done when the air taken into the lungs is deficient in oxygen; the blood carried out from them will be dark colored instead of bright red, as it should be. This gives the lips a bluish tinge, instead of their natural hue. The cheeks and finger-tips will be dark red instead of pink. Tight corsets, diseased lungs or heart are sometimes the cause of blue lips and finger-tips; breathing the same air over and over again produces a similar effect.

Hunger is the mainspring which keeps going all the business of life. Nature has arranged to supply the necessities of life according to their urgency. The act of breathing can not be delayed; all around us is an abundance of air, always fit for use, unless polluted by man. We can bear thirst but a short time, and water is found everywhere that man needs to live. We can go for a long time without food, and for that we must strive. Even the animals in the state of nature must

work before they can eat. The flesh-eater must hunt its prey; the vegetable-feeder must gather its meal little by little. In this day it is rare for man to starve; the danger lies in excess, because a great variety of food tempts the appetite. The natural, unperverted taste is the best guide to the selection of diet; but this kind of taste is seldom found. Mothers begin to spoil the taste of their offspring before they have their teeth. Babies have very little perfect saliva or very little of the similar fluid that is formed by the pancreas; therefore, they can not digest starchy food perfectly, yet nothing is more common than to see them stuffed with preparations containing corn starch or arrow-root. Mothers very often feed their little ones with the same as they themselves eat; such diet is unfitted for the undeveloped digestive organs of infancy. Mixed diet, such as meat, potatoes and other vegetables, ought not to be given until the double teeth are cut. They will cause distress, colic, diarrhoea, or fretfulness. Summer complaint is not seldom due to unsuitable food. If given at all, it is less harmful when the mother chews it—but never let any one else than the mother feed a baby with chewed food; you can not be certain but that blood disease may be given the child in this way.

Highly seasoned food destroys the natural sense of taste, and makes it an unsafe guide. *Too great a variety of food at each meal* also perverts the natural taste, as do also pickles, preserves and rich pastry. Taking into account the almost universal practice of high seasoning, great variety, and artificial preparations, it is little wonder that people in civilized society can no longer trust to their taste alone in the selection of their diet.

The sensation of hunger is Nature's method of making known that there is a want of elements to repair wastes. That ravenous appetite with which one is sometimes annoyed, that can not be satisfied even by filling the stomach to its utmost, is generally due to the want of some element which the food eaten does not contain, or the inability of the digestive organs to extract that particular element from the supply offered them. Such an appetite is more quickly satisfied by changing the diet for a time, than by eating a largely increased amount of the usual food. This fact should be fixed in mind—it is the amount of food digested which sustains life. It makes no difference how much may be eaten, it is only that portion which is transformed into chyle that passes into the blood—all else is waste. Those who have the care of the sick too often lose sight of this important truth, and, especially in the

case of children, persuade them to eat when their stomachs need to have rest. Persons who lead quiet, inactive lives are greatly troubled when their appetite fails; the probability is, in all such cases, that the bodily supplies have been too generous; they have furnished more than was needed. The better course for them is to eat sparingly for a time, or exercise more; this is a better recipe for restoring their lost appetite than can be found in the medical books.

The number of meals a day are not, without reason, usually three. The savage may go for a day or more without eating, and then gorge himself with anything he can get; but that does not prove that his way is a desirable one. Three meals a day give time for food to digest, for the stomach to rest, and for business to be carried on, while these intervals do not leave time for the body to become exhausted for lack of food. Children need to eat oftener, while growing; five meals a day are not too many. They need controlling in their diet; that is one duty of parents, to give their children healthy stomachs and sound constitutions; these can not be built up on sweet-cake, pie and candy. Coffee and tea should not be given to children at all. These are stimulants, and enable people to use what strength they have without giving them any more; therefore, they should not be indulged in until growth is complete. When it is thought best to give a warm drink with meals, let it be hot water and milk, which does not, like tea and coffee, lessen the appetite for solid food.

Food Should be Taken at Regular Intervals.—The muscles are kept hard at work during digestion, moving the food about, the glands are busy in forming the fluids which act upon the food; these parts wear out by work, and during rest recruit their strength. When they are given no opportunity for rest, they become weak and do their work imperfectly. Most people do not consider fruit, candy, pop-corn and other articles so generally eaten between meals, in the light of food; yet the process of digestion must be carried on the same to dispose of them as for the regular meal. The numerous fruit stands and candy stores in the city, and the apple bin in the country, have quite as much to do with the prevalence of dyspepsia as the hot bread and fried pork at which so many anathemas have been hurled. Gum-chewing is another prolific source of dyspepsia. The act of chewing stimulates the salivary glands to work when they should be resting, and the consequence is that the inveterate gum-chewer has saliva of poor quality, deficient in important elements.

Amount of Food Required.—An adult person needs food to replace that used up by the exercise of the muscles, and the work done by the various organs and to keep the machinery in repair; the child must have, in addition, material for growth. There are heat and force to be provided for also. It requires less heat to keep the bodily temperature uniform during the warm season; therefore, less heat producing food is called for. Those who do severe muscular labor use up material more rapidly than those who lead lives of leisure, and therefore need more food. The aged, who are compelled by the infirmities of advancing years to cease from active labor, should eat less than formerly. It will be seen that there can be no fixed rule about the amount to be eaten daily. Each one must be his own guide in this matter; however, this rule is a safe one to follow. So long as the body is healthy, increasing slightly in weight during cold weather, losing a little in warm weather, and the stomach carries on its work so perfectly that its possessor is not aware, from any disagreeable sensations, that he has a stomach, there is no occasion to vary the usual diet. The habit of taking too much at a time stretches out the stomach far beyond its natural size. In time it becomes permanently enlarged and incapable of properly digesting a small amount at a time. When over-stretched by its contents, the muscles which produce the churning effect can not contract to do their work—consequently, the food remains a long time unchanged.

The Stomach Must Have Exercise.—The old adage says, “It is better to wear out than to rust out.” It is certain that Nature has planned that those organs which are especially concerned in preserving life must work, and we must see that there are no hindrances placed in their way. The stomach was made to perform a laborious task; exercise, in reducing the mixed collection of articles furnished it into a uniform mass, strengthens it. Some bulky food is needed to distend it—to give the muscles something to grasp as they contract. Those who have suffered from attempts to vomit when the stomach was empty know how distressing it is. A hint is in place here. In all cases of vomiting give warm water in large quantities—a quart if possible. This gives the muscles something to act upon, and, as it is thrown out, give more, until the stomach is thoroughly washed out; it will then be quiet, unless the nausea is caused by some disorder located elsewhere. Another reason for giving bulky food is that a craving will be felt until the stomach is sufficiently filled; therefore, one is apt to

eat too much when the food contains little bulk. For example, half a pound of fresh beef is enough for a meal, yet a pound will not fill it. Cheese is a very nutritious food, but too concentrated to eat alone; therefore, bread or cake is always taken with it. Give a horse grain without hay or straw, and the animal will fail in health and strength.

Application of this principle.—Since common articles of food contain different amounts of bulky wastes, it is beneficial to make such a selection for the sick as will best assist the action of the medicines they are taking.

When there is a tendency to sluggishness of the bowels with constipation, the more bulky food is needed to excite them to action. Graham bread, owing to the amount of bran it contains, is very popular for this purpose; baked apples and other fruit, with such vegetables as can be digested, are also beneficial. In cases of diarrhoea, dysentery, and other disorders that affect the bowels, such articles as beef tea, milk, arrow-root, which contain little waste, are more suitable. Milk contains all the elements of the body in a form that requires less labor to fit it for making blood than any other material, but it does not give the healthy stomach enough to do when it is taken as the only food. In many diseases, for the young, the aged, and the very feeble, it frequently becomes necessary to relieve the digestive organs from as much labor as possible; then a milk diet is the very best that can be selected. Milk in the stomach is separated into curd and whey; if a large quantity be taken at once, the amount of curd formed may be too great for a feeble organ to dispose of; it will then cause distress and a feeling of weight or oppression, which will lead the patient to suppose milk unsuitable. All cases confined to this diet will thrive better when it is given in small quantity, at regular intervals; a half pint every three hours can be taken when a pint three times a day can not be borne at all.

The various juices or secretions required for a mixed diet are prepared as they are needed; some of them are not formed at all when liquids alone have for a long time been the only food. A broken jaw, an accident that burns the throat (as swallowing a poison), a stricture of the gullet, etc., permits only liquid food to be taken for many months; the return to solid food must be gradual, to give the glands time to resume their work. A neglect of this precaution will produce severe dyspepsia.

Tight Corsets and Waist-bands Hinder Digestion.—

These interfere with the movement of ribs and diaphragm, which, as we

have seen, push the stomach up and down, as the breath goes in and out of the lungs, and help to keep its contents in motion. Stooping over a desk, or sewing while the stomach is full, hinders its motion; this habit makes the stomach and liver torpid, and also lessens the vermicular motion of the intestines, which is always most active during digestion.

Fatigue Delays Digestion.—Those who have become exhausted from hard work suffer during digestion, if they eat heartily before they become rested. A cup of beef extract, milk or light nourishment taken a short time before the regular meal will fit them to digest well. Soup for a first course fills this need admirably. When digestion is difficult a tired, exhausted sensation accompanies it; but as soon as the act is complete, and the prepared food is being distributed throughout the system, this feeling passes off, and vigor succeeds it.

Eating at Bed-time.—So far as supper just before bed-time is concerned, experience is the best guide. It is never prudent to retire immediately after eating a very hearty supper, because the weight of the distended organ presses on the large blood vessels, especially when lying on the back, and checks the circulation;—this produces nightmare. Persons who are troubled with too much blood in the head endanger their life by retiring with a full stomach. Many people, especially the feeble and the aged, sleep better after a light supper; one who goes to sleep hungry will awaken tired and weak. The demands of the growing body make the appetite keen; the pangs of hunger are far more distressing to the young than to grown people; therefore, select some other way of punishing a naughty boy than by sending him supperless to bed—it is rank cruelty.

It is Unhealthy to Eat Very Hot or Very Cold Food.—Very hot food stimulates the coats of the stomach, and for a little time digestion goes on more actively; but reaction follows stimulation always, and then it will be retarded. Cold draws heat out of the walls of the stomach, and lowers the temperature below the point at which digestion goes on most actively; the natural temperature of the body is the one best adapted to this work.

Pure Air is Necessary to Perfect Digestion.—Those who sleep in close, ill-ventilated rooms lose their appetite. In an eastern city, the air in a sewing-room where many girls were employed, was noticed to be very impure; kind ladies, interested in their welfare, succeeded in having ventilators put in. After a few weeks the girls almost unani-

mously demanded to have them closed; the fresh air made them so hungry they could not afford the extra cost of food on the wages they received. A manufacturer once stated before a committee of the British parliament that he removed an arrangement for ventilating his establishment because his hands ate so much more he could not afford it. Seamstresses, school teachers, as well as school children, mechanics, factory operatives, and all who labor in the impure air of close rooms have more or less dyspepsia.

The Skin Exerts an Influence Upon the Digestive Organs.—An inactive skin, whether this state be produced by a chill or by lack of cleanliness, which permits the pores to become sealed up by dirt, affects the internal organs; stomach complaints, biliousness, and disordered kidneys sometimes originate from this condition.

To Restore a Starving Person.—It is extremely dangerous to give a person who is greatly exhausted for want of food all he can eat, or that which requires much digestion.

Some of the prisoners in the late war, who were released by exchange after nearly perishing from starvation, were allowed to eat what they chose, with the result that many of them died of indigestion. The stomach, in common with the rest of the body, was weak and unable to do its ordinary work.

When very greatly exhausted, give broth, or soup. In these days when canned beef extract may be had at any drug store or grocery, a soup can be prepared more quickly than anything else. It should be given in small quantity, as a tea-cupful every hour, until the strength is increased sufficiently to make solid food safe. Stimulants are positively harmful; for, while they may whip up the natural powers temporarily, they are almost certain to leave them dangerously exhausted.

The Wastes Must be Evacuated Every Day.—The wastes—ashes and smoke—of the fat used up in the body are mostly carried off from the lungs as carbonic acid gas. The refuse from muscle-making materials is carried off through the kidneys as urea. The indigestible parts of food, such as woody fibers, stones, seeds, skins, etc., with other debris, are removed by the bowels. Whenever these wastes are not removed, digestion and all other operations of the body go on slowly and imperfectly. The fire burns in the stove when the ashes have filled all vacant spaces and threaten to envelop the fire itself, even

when the chimney is almost filled with soot, but the fuel gives forth little heat with considerable smoke, and constant attention is needed to make it burn at all. Similarly, the work of the body is hindered by accumulations of waste material. Lack of bulky wastes in the food occasions constipation, because there is nothing for those muscles to grasp which contract to move the contents of the bowels onward. Lack of exercise, or of the right kind of exercise, is the most frequent cause of constipation. All kinds of work that keep people in a sitting posture during the day—a leisurely life, such as many ladies lead, who spend their time on sofas or in easy chairs, and take their out-door exercise in a carriage—leads to inactivity of the bowels. Anything which hinders the free movement of the diaphragm produces the same effect.

While referring to the subject of constipation, a word is in place regarding the care of children in respect to the calls of nature. They should be taught from infancy to be regular in attending to them, for habit is everything in securing regularity. The disgraceful provision made for school children in country schools is the cause of great suffering. Mothers should take it in hand, and see that the school-house is provided with decent and comfortable privies. It has been left to the men ever since public schools came into existence, with what result an examination of the out-buildings of the school-house in your own neighborhood will show. The accommodations on the premises of many citizens are scarcely better than for the schools. An open vault, with air space through which the wind blows freely, has certain advantages as regards ventilation that are more than counter-balanced by the exposure of those compelled to use them. The cold air blowing up against and around that part of the body most warmly clad, therefore generally moist with perspiration, is responsible for many a mysterious cold; it has cost many a life; it has filled many a doctor's purse at the expense of men who thought they could not afford to furnish a comfortable privy for their family.

CHAPTER X.

WHAT SHALL WE EAT?—ELEMENTS FURNISHED BY FOOD.

Did it ever occur to you, dear reader, that our daily food has much to do with our success and our failures in life? Its intelligent selection to adapt it to age, constitution, occupation and season, is worthy of more thought than it generally receives. The growth of children is affected by it; the health of the mother depends upon it; the amount of work done by the laborer is governed by the quality of his diet; the sermon, the newspaper, the book and all products of brain-work are biased by the kind and quality of food furnished the author; the habits of body, mental, moral and physical, are also greatly influenced by diet. The drunkard not infrequently owes his downfall to the quality of the food which his mother or wife sets before him; and so we might go on to the end of the chapter, enumerating all the pursuits or the vices of mankind; for the food supplies the materials from which the flesh, the bone, the nerve, the brain and the blood are made. Their perfection and harmony of action, or the lack of it, determine what place a man shall occupy among his fellow-men; therefore, upon women, who, for the most part, are the cooks of the world, rests the grave responsibility of supplying such nourishment as shall make their husbands and children healthy, vigorous, temperate, or the reverse. "The way to a man's heart is through his stomach," is a common saying, and a tolerably true one. The study of food in its relation to bodily and mental vigor is one well worth attention; it should be begun in the school-room, in place of some of the studies of questionable value now forced upon pupils by teachers who lack the practical experience in the affairs of life which alone can make them judicious advisers. It is not well to be continually questioning whether each article placed before us is healthy or otherwise; we are made for a higher purpose than to occupy ourselves exclusively with considering "What shall we eat? or, What shall we drink? or, Wherewithal shall we be clothed?"

A Practical Knowledge of Housekeeping, a Woman's Most Important Accomplishment.—The successful man studies every detail of his business, so that he is capable not

only of directing those in his employ, but of knowing whether their work is well done. The farmer knows that if he would prosper he must make his own plans and see them carried out; that the watchful eye of the master, and often his strong arm, is needed to keep his farm in good order, and to manage it profitably. Women should bring to the art of cooking an equal zeal; there is no department of house-wifery so badly managed as the kitchen. Some women waste their strength in their devotion to the stomachs of their family, spending hours in concocting too many rich and palatable delicacies, which ought to be devoted to other purposes. Some believe sewing, cleaning, decorating, are of more importance than cooking. Others, from feeble health, a few from laziness, trust everything to the hired girl, who, in the majority of cases, is as unfitted as her mistress to make suitable selection of diet for the family table. Every woman, be she rich or be she poor, neglects the duties of a housewife, when she does not prepare herself to manage her business better than a servant, who can not be expected to take a special interest in it, who has had no training to fit her for her work, or who is a stranger to American ways. A wife that has had no opportunity to learn domestic economy before her marriage, if she be of the right sort, will make it her first aim, on entering a home of her own, to fit herself for her new duties. A wise mother will see that her daughter is thus trained long before this period arrives; a few have frivolous, foolish mothers, and are likely to be both frivolous and foolish themselves. Unfortunate is the man who selects such an one to preside over his home! All women ought to know that, as a rule, the sisters of the envied class, that has never known poverty, are careful housewives, and look closely after their kitchens, unless they are fortunate enough to have a trusty housekeeper to relieve them. They allow no reckless expenditure, no waste, nor do they leave the selection of the food for their meals to the servants. The newly rich, or shoddy class, are not by any means such good managers.

Occasionally sickness prevents a mother from carrying out her plans for her daughter; death often removes the mother before her child is old enough to be taught what no one else has the patience to teach her; whatever be the cause, the wife who finds herself in charge of a home, and responsible for its management, is sadly handicapped when she has no practical knowledge to guide her. Fortunately such knowledge is easily acquired when one wants it; there are, in every

community, excellent housekeepers, who will cheerfully aid a novice in learning; there are instructive cook books and manuals of household science for those who wish to master the art, so that there is really no excuse for a woman's failure to be at the head of her domestic affairs. One of the most admirable of housekeepers we have known is a lady who, for the greater part of her married life, has been confined to her bed. She has always been dependent upon young, inexperienced and unreliable girls; yet so methodical are her arrangements that not only is her home a model of neatness and cosiness, from cellar to garret, her meals regular, her food nicely cooked and served, but the expenses are less than in many a home where the wife is able to do all her own work. This lady was a musician in her youth, and expected to devote her life to her profession, therefore had never paid the least attention to domestic affairs. Ill health destroyed all her prospects in a musical way; yet, resolved that her life should not be a failure, she made the most of her opportunities with the result just described. Undoubtedly the cross that has borne so heavily upon her has contributed not a little to the welfare and happiness of her family; and who will say that, after all, this is not a nobler calling than one which wins the plaudits of the public.

The taste is the porter which guards the door of the mouth; were it not for that, unwholesome food would be readily eaten. It is a remarkable fact that what is unfit for food has nearly always an unpleasant taste. Watch a cat eat; give her something before unknown to her, and see how daintily she touches her tongue to it; if it be the least suspicious she turns away, and no coaxing can persuade her to eat it. Taste not only warns against unsuitable food, but affords pleasure. God had not confidence enough in man's reason to trust to it alone for supplying the wants of human nature, so he placed a plaything in the shape of pleasure after every necessity, and in supplying a want, man finds his reward. If, on the other hand, he seek only pleasure, regardless of the purpose for which it was given, and its limitations, he is punished by being deprived of the pleasure he has abused.

Following the plan of nature, food, then, should be palatable, pleasing both to the eye, the smell, and the taste.

There is a Right Way and a Wrong Way to Cook Everything that Ever is Cooked.—Bread that is heavy or sour is unfit for the human stomach; rancid butter, sodden potatoes, tainted or diseased meat, are all unhealthy. Any of

these may produce bowel disease or fever, days after they are eaten. Many forms of disease, whose origin is a mystery to the sufferers, start from eating some unsuitable article of food. Milk and meat, when decomposition is just beginning, contain a poisonous substance called a "ptomaine," which makes those who eat of them sick, and not unfrequently causes death. It is this which usually produces the wholesale poisoning from eating ice cream, chicken pie, oysters, etc., of which we sometimes read. *Measly* pork gives those who eat it tape-worm, and trichina in man also comes from pork containing that parasite. It is sometimes coiled up in a little sac, which may be seen in the meat as a tiny white speck; when these are abundant it crackles as it is cut. The trichina may be present, not inclosed in its sac, and then is invisible to the naked eye. It produces in man symptoms of several different diseases; the ones more frequently observed resemble typhoid fever and muscular rheumatism. Long exposure to great heat is the only way to make such articles harmless. The ordinary method of frying meat, which quickly browns the surface while it scarcely more than warms through the inner layer, is no safeguard against the germs which do us the most harm. The subject of cookery is one which should interest us, not only for the sake of pleasing the palate, but because in many ways it has to do with our very existence. Prepared right, and neatly served, food is in its most digestible form: potatoes, for example, come to the table dry and mealy, not waxen or water soaked; meat is tender, juicy and finely flavored; bread is light and sweet; the process of cookery has begun certain changes which aid the mouth, stomach, and entire digestive apparatus in extracting those elements which renew the brain, the blood and the nerves.

Importance of a Well-selected Diet.—The subject of food has been most thoroughly studied, and the facts given in this volume are based on such study. The supplies for armies, for prisons, for state charitable institutions, are required to be abundant, yet of the cheapest material that will serve the purpose. The most careful experiments have been made to determine the quantity per head actually needed to keep the health and strength natural; the quality best adapted to prison life, to men on the march, as well as in camp; to the invalids in hospitals, and the paupers in the poor-house. While private families can afford more generous supplies, yet, take the world over, it is very doubtful if the masses of mankind and womankind are as well fed as the inmates of penitentiaries. Not that they do not have a greater variety, more

attractively prepared, but that the study that has been brought to bear upon prison diet has resulted in a selection which furnishes all the elements of nutrition in a more digestible form.

Man was Designed to Live on a Mixed Diet.—An examination of the teeth of man shows that his Creator designed him to live upon a mixed diet. Those animals which live upon flesh alone have tusks to hold their prey, and sharp cutting teeth to chop it up; man has the canine teeth corresponding to the tusks, and the cutting teeth in front. Animals which live exclusively upon vegetables, grass, etc., have strong rounded teeth for grinding their food; man has these in the molars, set in the back part of the jaws, where most force can be brought to bear upon them. Animals which eat flesh move the lower jaw up and down, as if hinged; those which grind their food move it partially around to draw the molars across each other, which produces the grinding effect; man moves his jaws in both these ways. Again, animals which feed exclusively on flesh have a short intestinal canal; raw flesh needs very little digestion—little more, in fact, than dissolving. Vegetable-eaters have very long intestinal canals, because such food must undergo many changes before it is fit to be added to the blood. The intestinal canal in man is very long, while it differs from the strictly vegetable-eaters in being better adapted for digesting flesh. For these reasons it seems certain that a mixed diet for man was the plan of the Creator. Owing also to the peculiarities of his digestive organs, man is enabled to live exclusively upon either animal or vegetable substances, when necessity demands. This fits him to live in all regions; to change from one part of the globe to another. It makes it possible for the Esquimaux to live upon train oil, with a small quantity of the moss which grows scantily in the frigid regions; it enables the inhabitant of the torrid region to live on cocoanuts, bananas, or rice, with a little fish occasionally; it enables man everywhere to engage in pursuits that would be forbidden to him if his diet must invariably consist of either vegetable or animal food.

The three kinds of food which every one needs may be called *flesh-formers*, *bone-makers* and *body-warmers*. Milk contains everything required by the body. Some people suppose that milk is not a food, and it is not uncommon to find the friends of a patient confined to a milk diet very anxious lest starvation result. Occasionally we hear of a case who is said to eat nothing whatever; when inquiry shows that the supply of milk taken daily affords abundant nourishment.

Examine, if you please, the following table, and you will readily see that there is no danger of starving under such circumstances. A pint of new milk contains the following :

COW'S MILK.		MOTHER'S MILK.	
Water.....	13 oz.	14 oz.
Flesh-formers.....	$\frac{3}{4}$ oz.	less.
Body-warmers.....	$1\frac{1}{4}$ oz.	more.
Bone-makers.....	$\frac{1}{2}$ oz.	same.

It is evident, then, that milk furnishes material for every part of the body, therefore is the most perfect food—but not for every one. It is necessary for the teeth, the stomach, the glands, all to work; when the teeth are always employed on soft food, that needs no chewing, they decay from lack of exercise; when the stomach has food given it that is almost digested, it grows lazy; when the glands are not whipped up by the necessity of furnishing their secretions, they cease work. In childhood the digestive organs are not fully developed; in old age they become defective from wearing out; therefore, in the extremes of life, a large proportion of milk with the meals is very desirable.

Gases which Form a Part of Food.—There are three gases which play a very important part in the universe. The air surrounds the globe like a mighty ocean. We can not see it, smell, or taste it; yet we hear the noise caused by it in motion, and know that the wind is a mighty power. This air, invisible as it is, consists of two gases—oxygen, the life-giving, life-sustaining element, and nitrogen, whose main purpose in the air seems to be to dilute it, as water is used to dilute wine or alcohol. A familiar experiment in the school-room is the burning of a candle in a jar of oxygen gas, turned upside down, because the gas is lighter than air; the flame grows large and bright, but quickly burns out. Accompanying this experiment is another, showing the effect of carbonic acid gas. The air in the jar is drawn into and breathed out of the experimenter's lungs several times; the jar stands right side up, to show that this gas is heavier than air; the candle cautiously lowered into it goes out, showing that oxygen has been removed from the jar, and that the gas that remains will not supply material for making a flame. Another experiment, equally familiar, is the separation of water into the gases composing it. There is something remarkably curious about the way the various elements are united in nature. Water is a very harmless as well as necessary fluid; the gases forming it are noth-

ing but oxygen and hydrogen, both invisible, neither making any impression upon our senses when encountered singly; yet, bring them together, touch a match to them, and you will have a tremendous explosion, during which they unite to form water again. Water will not burn, yet the gases composing it will each make a flame. These same two gases are employed to produce the calcium light, which is more brilliant than any other known, with the exception of the electric light. It will burn all metals, except platinum, as if they were shavings. The coal that miners bring from the mine is composed of carbon; the sparkling diamond is nothing but pure carbon.

Important Food Elements.—Let us examine the blood once more. When drawn from the body it quickly separates into two parts, one a yellowish transparent liquid, the other an opaque red mass floating on top, called the clot or coagulum. Wash the clot thoroughly, there remains a mass of fibrine, the material used up in the body to make the fibers of the muscles; it is the true flesh-former. Now let us see what there is to be found in it. The following table gives the analysis of 100 ounces of fibrine:

Carbon, 63 ozs.	Oxygen, 13 ozs.
Hydrogen, 7 ozs.	Nitrogen, 17 ozs.

Now we will examine some kinds of food which contain these elements similarly united. Take a handful of flour, hold it under a stream of water, kneading it lightly with the fingers at the same time. Collect the water in a bowl as it flows away. The mass in the hand is a whitish elastic substance that is very sticky and makes excellent paste; it is called gluten. There will settle in the bottom of the bowl a fine white powder, which is starch, the same a washer-woman uses for starching linen. Let us examine 100 ounces of gluten; we will find it contains the following:

Carbon, 63 ozs.	Oxygen, 13 ozs.
Hydrogen, 7 ozs.	Nitrogen, 17 ozs.

Animal food ought to contain the flesh-formers in the same proportions to make it equally valuable. Let us see what we can find in milk to correspond with it. Milk contains no fibrine nor gluten. When rennet is added to milk it separates into two parts, making whey and

curd. The curd is called casein (cheese), and 100 ounces of it contain:

Carbon, 63 ozs.	Oxygen, 13 ozs.
Hydrogen, 7 ozs.	Nitrogen, 17 ozs.

We have these two animal substances, fibrine and casein, and one vegetable, gluten, which are equally good flesh-formers. When these substances are dried it would puzzle an expert to tell which is from blood, or milk, and which from flour. Many vegetables contain an identical substance. It is said that the Chinese make delicious cheese from pease, that taste exactly like those made from milk. The following table will show some of the more important *flesh-formers*:

ANIMAL.		VEGETABLES.	
Beef.	Pork.	Flour.	Rice.
Fish.	Game.	Indian Meal.	Pease.
Poultry.	Eggs.	Oat Meal.	Barley.
Cheese.		Rye.	Buckwheat.

There are rather more long names connected with this subject than the non-scientific reader may like, but we will mention them as we go on for convenience of knowing to what they refer. All foods that make flesh contain nitrogen, therefore they are called *nitrogenous*. There is a substance with which we are all familiar, that plays an important part in keeping us alive, and that is albumen. The white of egg is pure albumen; the albumen from vegetables is called gluten; that from flesh, fibrine; just as the Smith family, to distinguish its members, calls one Sarah Jane, another George Washington, and so on; they are all Smiths at the same time, so the flesh-formers are all *albumen*. In Bright's Disease, physicians examine the urine for albumen. The reason is, that this substance ought to be used up in the body, and that which passes off should first undergo a change of form; therefore, when pure albumen in any quantity is found passing off, it means that flesh forming is not going on healthfully; the body can not stand such waste long, therefore if it be found to be constantly lost it is looked upon as a sign that the patient is in a dangerous condition. Albumen is occasionally found in the urine, temporarily, during a fever, the healing of a severe wound, or sick headache, and under these circumstances it need excite no alarm. Fibrine is the material which heals wounds of all kinds. When a healthy person is cut with a sharp knife, the best way to treat the wound is to bring the raw surfaces together and

bind them up, "in the blood;" the fibrine does the rest when left to itself. There is no ointment, salve or application whatsoever which can knit together the lips of a wound and heal it. People believe differently, but they are simply mistaken. The blood furnishes the material, the nutrient vessels carry the fibrine to the place where it is to be used, and the work is quickly done. Persons who have impure blood, wounds made with dirty tools, or dressed in unclean bandages require different treatment. It is in these cases that the medicines referred to are needed; the work they do is either to destroy bacteria, or poisonous fluids in the wound, to protect the raw surface from injury, to keep it from getting dry or irritated, and to prevent the growth of "proud flesh." If there were no fibrine, a cut would never stop bleeding; when the blood contains too little of it, a person will bleed dangerously from a slight wound; even a mere scratch has been known to prove fatal.

The source of heat and power, or force, is the same in the body as for the engine—it is carbon. Starch is an excellent combustible. Every 100 ounces contain:

Carbon	45	ozs.
Hydrogen	6	ozs.
Oxygen	49	ozs.

It will be seen that starch is nearly one-half carbon; it is also well supplied with oxygen, to burn it under the right conditions. Carbon burned in the body produces heat, and leaves behind carbonic acid gas, the same that is thrown off by the lungs. Take away from starch a portion of its carbon, so that there remains only 36 ounces of it in each 100 ounces, it is turned into sugar. In Europe there are great factories where bags of starch are converted into syrup, so that people may sweeten their coffee at breakfast with what might have been made into rolls had it not been taken to the factory. A pocket handkerchief is composed of the same materials as starch, and in the same proportion; so that if a chemist should take a fancy, he can transform it into syrup or sugar on short notice. All articles which contain carbon are called *carbonaceous*.

The principal *body-warmers*, or carbonaceous foods, are these:

ANIMAL.		VEGETABLE.	
Butter.	Cream.	Starch.	Cotton Seed Oil.
Lard.	Cod Liver Oil.	Sugar.	Bread.
Suet.	Dripping.	Molasses.	Beans.
Fat Meat.		Olive Oil.	Pease, etc.

The flesh-formers and body-warmers are combined in the same article, as we have seen in the case of flour, which is composed principally of gluten and starch. Bone-makers also are found in union with them. As previously stated, the larger proportion of the bulk of all bones is gelatine, or glue.

Lime united with phosphoric acid gives them solidity; but this is increased by lime united with carbonic acid, making carbonate of lime. Other minerals that are found in blood or bone are iron, sulphur, soda, potash, silica, manganese, etc., etc. It is sometimes said that the body is the "epitome of the universe," because it contains a specimen of every element composing the earth, the objects upon its surface, and the air surrounding it. The most wonderful of all is phosphorus. In the form in which we see it at the druggists it is a soft, waxy-looking substance, which shines in the dark, takes fire in the open air, and can be preserved only by keeping it covered with water. It is so poisonous that those long engaged in making lucifer matches suffer from a very destructive ulceration of the bones in the nose and mouth, although there is a very small proportion of phosphorus used in this work.

Little children are often poisoned by putting matches in their mouths. This remarkable substance exists in another form entirely distinct from the active state. "In the one case it is like a soldier with his loaded musket pressed to his shoulder and his finger on the trigger, almost anticipating the command to fire; in the other it is like the same soldier with his unloaded weapon at his side standing at ease." Within the body phosphorus has the power of uniting in different proportions with various salts—for example: A child is beginning to walk, and the bones of the legs need to be strengthened; phosphorus takes three units of lime to them making them solid; but the bones of the skull must remain soft and yielding, for it has many a fall, and the more elastic the bones are the less it will suffer when its head strikes a hard object. Less lime is needed there, and phosphorus regulates the amount. The teeth need to be harder than the hardest bone, to form cutting edges and grinding surfaces; therefore, phosphorus carries to them a very large proportion of lime, and packs it hard and firm. Phosphorus keeps the blood alkaline or salty, the flesh acid, and acts the part of "universal regulator." We receive our supplies of phosphorus from bread, oat-meal and meat, particularly fish. It is no use to depend upon any artificial preparation; it will not answer the same purpose—the digestive organs must extract it from our food in their own way.

Water supplies a large part of our minerals; this comes from rivers and springs that run through the earth, dissolving the substances in the soil, just as sugar is dissolved by water. The clearest drinking water contains iron, and many other ingredients that we little suspect of being in it. Common salt is broken up in the body, and uniting with other elements forms soda, which is needed for bile, and hydrochloric acid, a most important part of the gastric juice. It has been noticed that in cases suffering from cancer of the stomach this acid is not found. What relation this bears to the disease is unknown, as cancer in this locality is always preceded by severe dyspepsia, and some physicians recommend hydrochloric acid for all cases where the gastric juice contains no acid. It must be given in very small doses, and continued for several weeks to do any good. Phosphate of lime is found in wheat, corn and all grains. Bone meal, made by grinding bones, is sometimes spread, as a fertilizer, over ground designed for wheat. The heat of the sun, with the moisture of the air, separates the phosphate of lime from the gelatine of the bone; it sinks into the earth, and is taken up by the wheat in growing; we eat it, and it is used to keep our bones in repair. Vegetables and fruit contain a large amount of potash. Potatoes, cabbages, turnips, apples, oranges, etc., supply us plentifully, provided we eat them in a form that preserves it. The water in which vegetables and meat is cooked dissolves out some of the elements we need; such water is a useful addition to soups. Bad cooking deprives vegetables of much of their value; the water in which a pound of peeled potatoes is boiled contains 17 grains of carbonate of potash; water in which cabbage is boiled, 21 grains sulphate of potash. Potatoes ought to be cooked before peeling. Potash is a wonderful remedy to keep off scurvy; but the potash from the druggist will not do it. Nature concocts her remedies with a cunning hand, which man can not imitate. Formerly, long sea voyages were dangerous, owing to the scurvy caused by eating nothing but salted provisions. It is said that a captain once sent men to a barren looking island to seek for some vegetable to relieve his crew, who were all suffering from scurvy. They found nothing but purslane growing there, but they gathered a large quantity, of which all ate freely, the cook making a kind of soup out of it for a variety. The sick men all recovered. On returning to port the circumstance was reported, and some chemists analyzed the plant to discover what it contained; they found nearly the same elements as are in lemon juice: therefore, this has always been provided since for long voyages, and the dreaded scurvy is rarely heard of in these days.

Economy in Diet.—Economy is here used in a two-fold sense: it means not only that food may be selected to perfectly nourish the body at a fraction of the expense incurred in ministering to the taste exclusively, but that by intelligent selection the work of digesting and assimilating it may be decidedly lessened. A variety of food offers the most economical diet, while it is, at the same time, most gratifying to the senses. Many experiments have been tried upon both animals and man, to learn the effect of living on only one kind of food. An American physician, who has tried many experiments of this kind on his own person, lived for some time on a diet of starch alone; and this is the report of his condition on the 8th day: Violent headache all day; mind somewhat confused; an almost constant twitching of the left upper eye-lid was felt, which caused great annoyance. There was a sense of oppression or weight in the chest, which was relieved by frequent, full and deep inspirations; there was also palpitation of the heart, and vomiting of sour fluid. Several boils made their appearance, scratches on the hand would not heal, and the lips were of a bluish tinge. Women, who eat little besides bread or toast and tea suffer from similar symptoms; they are, in fact, living upon a diet composed mostly of starch. Working women who earn small wages are compelled to economize strictly, therefore they often eat little besides this; the stimulating tea masks, for a time, the bad effect that is certain to follow a prolonged diet of this kind.

“In ancient times, when Ulysses, who had with others set out to seek the Golden Fleece, had been absent ten years, with no message from him in all that time, his friends gave him up for dead, and his wife, Penelope, was beset with suitors for her hand. To quiet them, she promised to marry as soon as she finished a piece of cloth she was weaving all the day long. Believing that Ulysses still lived, she raveled out every night all that she had done during the day, thus postponing her marriage until rewarded by the return of Ulysses himself.” The body is a kind of Penelope’s web, with this difference: here the web is being unraveled at one end at the same time that it is being woven at the other. It differs in another important respect—the same material can not be used a second time. If the web be ever so substantial at first, yet, as it is unraveled, thread of inferior fiber be furnished, there will come a time when all the firm threads have been unraveled, and the whole fabric will be of inferior quality. Women who have all the work of the family to do are liable to have no appetite for breakfast,

and drift into the habit of taking only bread and butter, with a cup of tea or coffee. They are too exhausted to digest well, and this diet satisfies them for a little while; but they soon feel faint and weak, and again resort to the teapot. There are some who keep it always hot, and are veritable *tea-topers*. It is a most destructive habit. There is no more certain way to invite the approach of consumption. This disease is always lying in wait for exhausted constitutions. A woman who can not eat after cooking a meal should, on first arising in the morning, drink a glass of milk or beef broth. This will give her more strength to work. When her stomach will not bear milk or strong broth, then is her condition serious indeed—a break down is not far off. A little pepsin will sometimes be all that is needed to make the food set well. This may be bought of the druggist; a substitute for it may be made at home (see recipe in Appendix). When poverty is responsible for a meager diet, it may be improved by selecting other articles that cost no more than tea and bread, but which are far better “to work on.” Milk or soups for the liquid part, and vegetables with bread, can be had almost as cheap as tea and bread alone, while the increased strength from the more nutritious diet will enable the worker to earn more money.

Many years ago, in a certain locality in Europe, the times were so hard that the high price of vegetables prevented their use among the very poor. Scurvy broke out among them, and one man, having broken his leg, was taken to a hospital. He was given all the bread and meat he wanted, but the bones would not grow together. After some time he was given all the vegetables he could eat, and the bones began to knit directly. There is no doubt that too few vegetables in the diet undermine the health and increase the risk of sickness. Repeated and unvarying experience show that well-fed laborers, working under the stimulus of high wages, do better and cheaper work than those whose wages are low, and whose living is scanty.

It is said that bricklayers in country places in England, who only receive 12 shillings per week for their work, and must live correspondingly poor, can lay only from 300 to 400 bricks a day. In towns where the wages are double, more than a 1,000 a day are easily laid. The human body is a machine capable of generating a certain amount of force, which has its limits. If this be used up in preparing the contents of the stomach to renew wastes, there is less to expend in other ways. When a man uses his force in hard manual labor, he has less to expend

in the act of digestion; yet, at the same time, he needs plenty of force-producing elements to enable him to work to the best advantage. The food of the laboring man is too often an indigestible mass of pastry, poor bread and cheese; such a lunch is digested with difficulty; to make up this loss of force he is too apt to resort to a stimulant, which is the very worst thing for himself that he can possibly do, for if he drive his overtasked powers to the utmost, he may accomplish more that day, but the reaction that follows stimulation makes him less fit to labor the next day. The work of the stomach is interfered with by alcoholic drinks taken during digestion; in consequence, there is an irritated alimentary canal and brain, so that the next morning he arises as tired as when he went to bed. It follows soon that he can not eat his breakfast until he has had a stimulant; when a man arrives at this state he is in grave peril, and he must make a strong effort to free himself from this craving, or he will soon reach the condition in which his desire for liquor will be uncontrollable.

How shall this be prevented? The first necessity is to provide the laborer with a hearty but easily digested lunch. Most employers would find that it would save them more than the cost, in the increased amount of work done, were they to provide their laborers with a plain, substantial dinner. The workman's basket is frequently set in a dirty, unwholesome place for hours, absorbing unhealthy gases which make its contents unfit to eat. The lunch provided for school children is, as a rule, very poorly adapted to making good blood, without which the active brain and muscles of the growing youth can not be kept in good order. A bottle of sweet milk, good bread and butter, with or without a slice of meat, or a boiled egg or two, and fresh fruit, is a suitable diet for all healthy children; pie, and cake, and candies will disorder the stomach, and make them peevish and fretful; such a lunch is not easily digested, and does not contain necessary food elements in the right proportion to make a healthful diet.

Suitable Food Favors Sobriety.—The study of foods, their relative and special value, is not more difficult than arithmetic, which every girl is expected to learn; it is only that the subject is considered of little importance, and therefore uninteresting, that it is also neglected. When one gives it deliberate thought, it seems incredible that our intelligent women are so largely disposed to leave the selection of food to the ignorant managers of their kitchens, while they expend freely

their means, their time and their strength to ameliorate the conditions of society which grow out of defective nourishment.

Diet Table.—The table given below shows the proportion of the different elements in some ordinary articles of diet:

HOURS TO DIGEST.	QUANTITY, 1 LB.	FLESH-FORMERS.	BODY-WARMERS.	WATER.	MINERALS.
3½	Bread - - -	About 2 oz.	About 10 oz.	About 4 oz.	About ½ oz.
4	Meat - - -	" 3 "	" 3 "	" 10 "	" ¼ "
3½	Cheese - - -	" 5½ "	" 4½ "	" 5½ "	" ¼ "
2	Milk - - -	" ½ "	" 1 "	" 13½ "	" ½ "
3	Eggs - - -	" 2½ "	" 1½ "	" 12 "	" ½ "
	Butter	None.	" 14 "	" 2 "	
	Suet				
	Lard				
	Oils				
	Sugar				
	Arrow-root				

DRY FOODS.

Wheat,	} Each pound contains-----	Flesh-formers, about	2¼ ozs.
Oats,		Body-warmers, "	12 "
Pease,		Water, "	1½ "
Rice,		Minerals, "	¼ "
Macaroni,			

WET FOODS.

Potatoes,	Apples,	} Each pound contains	Flesh-formers, about	1 oz.
Turnips,	Oranges,		Body-warmers, "	2 "
Carrots,	Gooseberries,		Water, "	12 "
Onions,	Currants,		Minerals, "	½ "
Lettuce,	Lemons,			
Rhubarb,	Pumpkins,			

The question of diet could be easily disposed of, if it were only necessary to know what amount of each element is contained in a human body of a given size, and it were possible to keep up the strength and activity by selecting as food those articles which furnish exactly the same quantity of material that is worn out in the intervals between meals. A child needs a greater quantity in proportion to its weight as compared with a grown person, to enable his bones, his muscles, and all his organs to attain their full size. They can grow only as supplied with material from without. This is true of every object belonging to the animal or vegetable kingdoms. The potato in the field drinks water and eats mineral and vegetable matter from the earth and air around it. Plant it in pure sand, moisten it, keep it at growing heat, it will sprout and grow till all the nourishment stored in the seed is used up; then, if

no fertilizer or soil be given it, growth ceases and it soon starves to death. A boy who is fed poorly is stunted in growth. Food may be supplied plentifully, yet, owing to some defect in the digestive apparatus, it may fail to meet the wants of the body. The unfinished house stands just as the carpenter or mason leaves it, until it crumbles into dust; it has no power to grow to completion. Bricks, mortar and lumber may be provided, but without skillful hands to put them together the work cannot go on. The food, when the digestive organs have finished their task, is but brick, mortar and lumber of the tissues; the absorbent and nutrient vessels are the busy mechanics which tear down, build up, and clean out the house in which we live. These vessels can not be seen at work after death; they are hidden from the most inquisitive student during life; therefore it is impossible to find out what the difference in them is, which causes one person to grow fat and another to remain lean, who daily partake of the same viands at a common table. For this reason it is impossible to select a diet that will be equally suitable for every one. Only very general rules, to which there are numerous exceptions, can be given. As near as can be estimated, a healthy man, of medium size, working in the open air, needs $2\frac{1}{2}$ pounds of solid food and about 3 pints of liquid every day. Of this amount, 10 ounces must be material which furnishes heat and force (body-warmers), and 5 ounces must be flesh-formers; the balance of the solid food consists of salts, water and waste portions, which distend the intestinal canal. It is said that only about 7 ounces of the *body-warmer*, or carbonaceous food, will be actually burned up in twenty-four hours. The harder a man works, the warmer he grows and the faster he uses up carbon, but there must be a surplus to lie between his muscles and to cover his bones. This surplus is laid up as fat. The savings bank of the blood, where it deposits its treasures until they are needed, is fat. Liebig states that a pig swallowed up by a land slip was found alive at the end of 160 days, but was almost a skeleton; it had lived on its fat all that time. It is said that the humps on dromedaries' backs are solid masses of fat, which enable the animal to go a long time without food; before they starve to death the hump is entirely gone. It is the same with man during sickness, when he eats little or nothing, the fat stored in his body keeps him alive; but as it is used up, he grows thin and wrinkled, and when his weight is reduced beyond a certain point he dies. You can set down the statements made in the newspapers about people who have lived from several months to years without eating as false in every

instance. A person in a trance, who does nothing but feebly breathe, needs very little nourishment, but the heart keeps on beating, the lungs move, and these slight movements wear out organs and use up blood. A patient in this condition will live until the fat is all used up, but then fresh supplies must be taken into the body or death will surely follow. The length of time persons may live without eating is not always the same; life has been prolonged from sixty to ninety days under some circumstances, and, again, it has ceased at the end of ten days or less. So much depends upon the conditions and surroundings that no rule can be given. The fact that, under unusual circumstances, it may be prolonged for several weeks, should encourage those seeking to rescue persons cut off from provisions by mine disasters and ocean accidents to persevere in their efforts so long as the least hope remains that the victims are alive. The rapidity with which the natural powers become exhausted in feeble persons should make nurses and friends watchful when caring for children, the aged or the insane, that they are not allowed to go too long without nourishment. As an example of how little dependence is to be placed upon a newspaper report of extraordinary cases, we cite an incident that recently occurred in this city. At the newspaper offices was received an account of the death of a young lady from a peculiar cause. She was very sick at her stomach, and, while vomiting violently, threw up a full-grown shrimp. She then remembered that, last winter, at one time while the water-pipes were frozen, her people brought water from a hydrant in the vicinity, and, taking a drink in the dark one night, she felt something slip down her throat. It was added that her physician examined the remarkable object, and gave it as his opinion that the creature had grown to its present size in her stomach, and had produced the illness from which she died. One editor took the trouble to send a reporter to interview the doctor referred to. When shown the account he was amazed. He stated that the girl's friends had brought him something which, to their excited fancy, appeared to be a shrimp. He found, on looking closely at it, that it was a partially digested slice of orange, which, coated with mucus or phlegm, might easily be mistaken for a crustacean. This editor printed the result of the interview; the rest, the alleged circumstance. As fiction travels with lightning speed, while old foggy truth jogs about in a stage coach, we may expect to hear for many a year to come of the Chicago girl who perished from drinking hydrant water in the dark.

Food Elements Needed by a Working-man.—To return to our subject, let us see what variety of food will supply in the best form the materials needed by the active working-man. He will need four pounds of white bread a day, if he eat nothing else, to furnish enough flesh-former; should he eat lean meat only, he must take six pounds a day to get sufficient body-warmer. On a bread diet alone he gets far too much carbon, or body-warmer; on meat alone he has too large a proportion of nitrogen, or flesh-former. Should he eat both meat and bread, he will need two pounds of bread for his supply of carbon, and twelve ounces of meat for his nitrogen. If he will take butter, or salad-oil, he will require less bread; by selecting vegetables and fruits, he may secure the same amount of carbon and nitrogen in a more attractive form than a bread and meat diet alone afford. Sometimes the mineral elements are wanting, again there is a lack of acids; it may be phosphorus, iron, or any one of the long list of elements whose value we do not know; this deficiency is shown by a craving desire for something, one scarcely knows what. The stimulus of liquor removes the craving for the time, and this leads many of the under-fed, the poorly-fed, and the over-fed, alike, to resort to intoxicating drinks. This is an urgent reason why women who are anxious that their husbands, brothers and sons shall be temperate ought to be able to select food intelligently, that shall supply the special wants of the various members of the family according to age, strength, habits, constitution, and employment, that they may not be beset by cravings that increase the temptation to indulge in stimulants. Pepper, mustard, spices, piquant sauces, frequently excite an inflammation of the stomach which impels the sufferer to seek relief in stimulating drinks.

There are other evil effects of giving these articles to growing children, which mothers ought to consider, but which we can not enter into here.

Those who like to study figures may be interested by the following estimates, which have been very carefully made. The subject studied was a healthy man, weighing 154 pounds, engaged in out-door work. In such a body there will be $\frac{4}{5}$, or 88 pounds, of water, and $\frac{1}{5}$, or 66 pounds, of solid matter. Such a body loses, every twenty-four hours, 6 pounds of water and 2 pounds of other substances. These pass off through the lungs, the kidneys, skin, and bowels, in the following proportions:

DAILY LOSSES FROM—	GRAINS WATER.	GRAINS OF OTHER MATTERS.	GRAINS OF NITROGEN.	GRAINS OF CARBON.
Lungs-----	5,000	12,000	---	3,300
Kidneys-----	23,000	1,000	250	140
Skin-----	10,000	700	10	100
Bowels-----	2,000	800	40	460

Since work expended on digestion is diverted from other purposes, the more economical diet for those engaged in hard labor is that which supplies these losses with the least effort. The following list is an excellent one for the purpose:

	QUANTITY NEEDED.
Lean beefsteak-----	5,000 grains
Bread-----	6,000 "
Milk-----	7,000 "
Potatoes-----	3,000 "
Butter or other fat-----	600 "
Water-----	22,900 "

In the case we are describing, the amount of force furnished by such a diet is capable, if applied to a machine, of raising 14,000,000 pounds' weight one foot; however, there is so much of it used up in keeping the human machine in good working order, the utmost power attainable is only equal to raising $3\frac{1}{2}$ million pounds one foot, and an average day's labor uses up no more force than would raise two million pounds one foot. Nature allows no waste; therefore, when this enormous supply of force is not expended in labor or exercise, it is stored up in the form of fat, and adds unnecessary weight to the body. About 3,000 pounds of solid and liquid material passes through our bodies every year; as the larger proportion is designed to supply heat and force, it will be evident that those who lead inactive lives need less food than those who work, or exercise vigorously. Those who have been very active, but discontinue exercise or labor, need to lessen the amount eaten. A proportion of fat which rounds out the muscles and obliterates wrinkles is a good thing; but a larger amount becomes not only a burden, but a danger. When Nature has filled all the places designed for storing fat, she is compelled to crowd it in where it does not belong; the blood vessels are made tender by it, so that they may be easily torn; the muscles of the heart are weakened by deposit of fat in them, making them incapable of keeping up the heart's force. A fatty heart is always a feeble one; under a sudden strain of lifting, running or excitement it is liable to give way suddenly. Shortness of breath, dizziness on going upstairs, feeble pulse in obese people, show that the heart is being dam-

aged by fat. The brain may be similarly affected, which is a forerunner of apoplexy. Almost every organ in the body is liable to be disabled by an excess of fat. Fortunately, the remedy is not far to seek: the cause of the accumulation being too large a proportion of *force-producing* food for the amount of labor or exercise, a person of strong will can reduce the weight to a healthy standard by cutting off the supplies. Because nearly all articles we take as food contain some starch or sugar, from which fat is chiefly made, it is not sufficient to depend entirely upon a change of diet; an increased amount of exercise, with suitable diet, will accomplish the work with less self-denial than when exercise is omitted.

Food Partially Supplies the Place of Clothing.—

Since food furnishes the fuel of the body, it may, in a measure, take the place of extra clothing. The well-fed person will endure, unharmed, a degree of cold that will freeze one who is half starved; the scantily fed and clad children of the poor suffer intensely from our winters.

Relation of Diet to Season.—The heat of the body ought to be regulated to suit the season, so far as may be done by care in diet; at the approach of warm weather the supply of body-warmers ought to be lessened. Hot cakes, with molasses and fat meat, are popular in winter; but these are great heat-producers, and, continued after the days begin to grow warm, are productive of the disorder known as “spring fever”—a mixture of symptoms, of which the more prominent are languor and debility, with yawning, and often a dull headache; biliousness and skin eruptions are frequently caused by eating too much heat-producing food in warm weather. After the mischief is done there is no better medicine to relieve the overloaded system and restore the equilibrium of the life force than “Happy Home Blood Purifier and Health Tonic”—a remedy not so widely known as its merits deserve; at the same time, fruits and vegetables should replace the sweets and fats that are needed in cold weather.

Effect of Excess or Deficiency of Certain Food Elements.—Food containing too large a proportion of albumen, oil or starch produces bilious or rheumatic affections and stiffened joints. Deficiency of oily material favors the progress of scrofula in those who have a tendency to it. Many of our ablest physicians believe that scrofulous children will grow up healthy if they can be prevailed upon

to eat fat freely during their youth. Butter, cream, fat pork or cod-liver oil are the forms most easily taken, but none of these will do any good when they "rise on the stomach;" that means that the digestive powers can not take care of the fat, in which case it must be prepared especially in an emulsion, which your doctor or druggist can provide for you. In this form it is partly digested fat, which will agree with the most delicate stomach. Excess of fat not only produces obesity, but throws an extra burden on the liver, that is apt to make it torpid or inactive, in which condition the bile is not withdrawn from the blood. This gives a yellow tinge to the skin and white of the eye.

Deficiency of salts in the blood causes softening or deformity of the bone; when the teeth, which have previously been sound, become brittle and begin to decay rapidly, it means that there is a grave fault in digestion, or a serious lack of proper food. It is sometimes the immediate forerunner of consumption or cancer. It is probable that there are people who lead languid lives solely for the reason that some element which their system needs is lacking. Yeast forms a very small part of the loaf, yet it is essential to its quality. The effect of being deprived of fresh vegetables for a long time shows itself in scurvy.

Common salt is decomposed in the body, and, in addition to elements important to many of the tissues, it furnishes one of the most powerful of germ destroyers. The eggs of worms and insects are being taken all the time with our food, and salt protects the system from many of them. Too much animal food is a frequent cause of muscular rheumatism.

Natural Tendencies May be Modified by Diet.—Flesh-making food, or nitrogen, is needed for active work, but it makes the temper more passionate. Two dogs of the Newfoundland species, brothers, were raised in neighboring families. One of them was fed exclusively on meat; the other never had any meat except what he might have hunted up, but was given a strictly vegetable diet, the object being to make him good-natured. The first one became a strong, active animal, but exceedingly cross, a terror to neighbors and strangers, whose business took them to the house. The second one was vigorous, an excellent watch-dog, but not as active as the meat-fed animal. He was not the least cross, was never known to bite anything or any one, and was remarkable for his intelligence. The method of using force differs

somewhat with the kind of food which supplies it. "The hunted deer will outrun the leopard in a fair and open chase, because the force supplied to its muscles by vegetable food is capable of being given out continuously for a long period of time, but in a sudden rush at a near distance the leopard will infallibly overtake the deer, because its flesh food stores up in the blood a reserve of force capable of being given out instantaneously in the form of exceedingly rapid muscular actions." Horses fed on hay are quiet, docile, but sluggish or lazy; corn, and especially oats, makes them sprightly, energetic, but restless and more difficult to manage.

The prize fighter, undergoing training to develop his physical powers to the highest degree, eats largely of meat, at the same time taking an enormous amount of muscular exercise, and drinks no liquors at all. As the class of men who engage in the "manly art" are not restrained from drinking by any scruples, we must conclude that they have learned from experience that intoxicating liquors lessen their ability to win.

In a reformatory school in France, it is found that a very generous diet is needed for weak-willed boys, to enable them to keep their resolutions. This effect of diet may be made useful in allaying the stubbornness of a child or in bracing up a man to his work.

The System Needs Water.—Water forms about three-fourths of the body. A large portion of it is taken as a part of the food we eat, the remainder as drink; it may be in tea, coffee, cocoa or other beverages, but in some form we are compelled to take a large amount every day, which varies with the kind of food and exercise taken.

Thirst is the sensation aroused by lack of water in the blood, or by irritating substances in the alimentary canal. Too much salt in the food draws water out of the blood; vigorous exercise produces a like effect, the perspiration being increased from the same source. Food that ferments, instead of digesting, often becomes extremely irritating, reddening the surfaces over which it passes, sometimes even making them raw; water is called for to dilute this compound and make it less poisonous. More water is needed in summer than in winter; by those who engage in active out-door labor than by those who lead sedentary lives; by large eaters of animal food, than by vegetarians. Water is the universal solvent; its presence in the blood keeps all the elements dissolved, that they may be carried where needed; it washes out the

wastes and carries them into the blood, where they are disposed of as already described. Alcohol will not dissolve many of the ingredients in the blood. On the other hand, it acts on albumen, coagulating or curdling it; in this state it can not be used in nutrition, yet alcohol in the blood produces this very effect. The brain is largely made of albumen; alcohol finds its way to the brain in a minute or two after it is swallowed; undoubtedly the lessened intelligence of the drunkard is partly due to this effect of alcohol. A cup of cold water is the most refreshing and cooling drink that can be given to a person who is suffering from the thirst of fever; the great heat has evaporated the water which the blood ought to contain; the water drunk soon grows as hot as the blood, turns into vapor, which opens the pores of the skin and carries off the heat by perspiration. It is always safe to drink water; even a baby will not be hurt by it. The blood will only take up a certain amount, no matter how much you drink. Domestic animals often suffer severely from the thoughtlessness of their owners. They should have water where they can go to it whenever they please. Horses, dogs, cats need a little water often, especially when fed on dry food. Dogs perspire through their tongues and mouths; very little sweat comes out through the skin; it is cruel to put muzzles upon them to prevent them from drinking, or putting out their tongue.

It is dangerous to drink cold water immediately after violent exercise or prolonged exposure to the hot sun, until the body has begun to cool; it is better to bathe the face and hands in cold water before drinking. A bath will often relieve severe thirst; when it is not relieved by cold water, bits of ice dissolved in the mouth, or hot water, will sometimes be very serviceable. Men obliged to labor hard in hot weather, especially when exposed to the sun, will run less risk from drinking ice-water if oat meal, in the proportion of half a pint to the gallon, be added and stirred in thoroughly, then allowed to settle, after which it is ready to drink. Fresh water may be added from time to time, until it is no longer given a whitish color; then more oat meal is required.

Some diseases are kept up by, if they do not originate in, a lack of water. Muscular rheumatism, biliousness, dyspepsia, and some forms of kidney complaint are among the number. Portions of waste matter which water only will dissolve are left in the muscles, the liver, the alimentary canal, or kidneys. It is almost useless for a physician to advise patients suffering from this trouble to take frequently large draughts of water to wash out the tissues; therefore he recommends the

waters of some distant spring. The patient goes, often with great expense and trouble, and does exactly what he might have done at home—drinks immense quantities of water, at the same time living upon a plain, well-selected diet, such as is advised at the more popular resorts, and recovers. We all have, however, a famous precedent for disbelief in simple measures—Naaman received with scorn the advice to “Go and wash in the Jordan seven times.”

CHAPTER XI.

DISPOSAL OF THE WASTES.—WHAT MAKES THE BLOOD IMPURE.

The burning of fuel in a stove not only produces heat, but also smoke and ashes, which are regarded as wastes. The manufacturing of any article out of the raw material leaves a certain amount of refuse. The same thing follows within the body in making heat, and muscle, and bone, and everything else necessary to it. Waste material is always in the way until removed from where it was formed. Such material within the body is not only in the way, but becomes a poison to it, if retained long beyond the time when it ought to be removed. Nature has, therefore, provided amply for its disposal, and most of the supplies are taken in through the lungs and the stomach; but the wastes are carried out through four different organs—the skin, the lungs, the kidneys and the bowels—in nearly equal proportions, when all are working naturally. These are called the excretory organs, from a word which means “to carry out.” A grown person, during one year, needs about twenty times his own weight of materials to keep him in good repair. As his size is not much increased in a single year, it follows that nearly an equal amount of wastes must be carried out (excreted) in the same time. This makes about two pounds daily for each of the excretory organs, in an active man weighing 150 lbs., and laboring in the open air. The quantity of wastes, as well as of food needed, varies considerably with the occupation. Those who do not work, and take little exercise, require less material to keep them in good condition.

What Makes the Blood Impure.—The most common source of impure blood is retained excretions; in addition to these polluted water and diseased or poisoned food (such as meat, milk, cheese, etc., when partially decayed) introduce impurities by the way of the stomach, while the vapors and gases from putrefying objects, or from patients sick with infectious disorders drawn into the lungs, also make the blood impure. When the lungs do not act freely, the car-

bonic acid gas, which ought to pass out through them, remains in the blood. We have already described the effect of this gas upon workmen who go down into wells or vaults where it has accumulated. The effect produced by its accumulation in the body is first dullness, head-

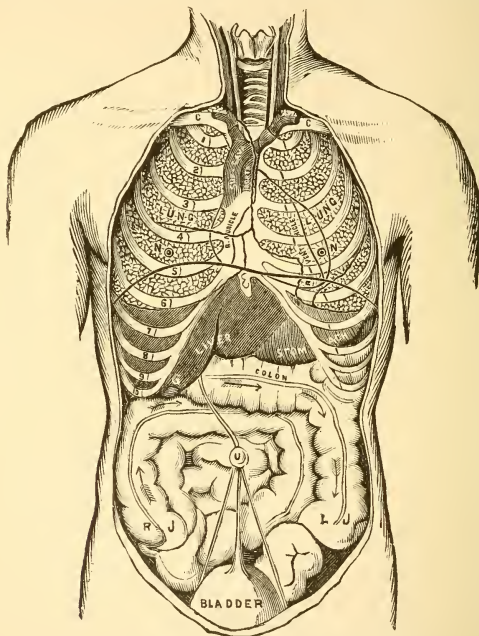


FIG. 12. ORGANS IN THEIR NATURAL POSITION.

C. C. Collar Bone; Clavicle.

1, 2, 3, etc. These numbers mark the ribs.

E. Lower end of breast bone; the rest is cut away to show the organs beneath.

G. Gall-bladder.

U. Navel, or Umbilicus.

The location of the heart is marked by the oval-shaped black outline. The front edge of the diaphragm is marked in curved outline across the body. It is attached to the walls at the back, lower down than in front, so that the heart is entirely above it. In the illustration it appears to project below the diaphragm. The arrows show the direction in which the contents of the abdomen are propelled by muscular contractions.

ache and weariness; after a time the lips look bluish, as well as the finger-tips, and all parts usually pink or red, showing that the blood in the arteries is black, or dirty blood. Carbonic acid gas accumulates in

the body whenever fresh air is not supplied to the lungs, or when these organs are diseased. A very little of it is carried off through the skin, but not enough to purify the blood. The waste left from muscle-making is principally a substance called "urea," which should be carried off through the kidneys. Sometimes this is not done perfectly, and the urea remains in the blood, giving rise to headache, rheumatism, dyspepsia and other chronic complaints. It sometimes collects in quantity sufficient to poison the brain and produce convulsions, as in one stage of Bright's Disease. The kidneys also remove a large amount of water that has been used to wash out the tissues; dissolved in it is considerable dirt, that is fully as injurious as urea. Sometimes the kidneys are disabled, so that they can not remove the water; when this trouble comes on slowly the water collects in the feet, abdomen, or other places, causing a swelling to which the name dropsy is given. The solid material carried off by the sweat becomes quite as poisonous as anything can be, when it is prevented from escaping by the closing of the pores. It is so dangerous that Nature loses no time in attempting to dispose of it.

At first the other excretory organs are called upon to assist in the work; when they are capable of doing their own work, and also the extra amount thrust upon them by the failure of the skin, all goes well, and we are not reminded of the accident or negligence which closed the pores. This is what occurs when a perfectly healthy person is exposed to a chill, yet does not "take a cold." There are, unfortunately, few people who have perfect health. The excretory organs are more or less out of order in most grown people; and, while they carry on their business sufficiently well to avert any serious mischief under ordinary circumstances, when an emergency arises they fail to do extra work, even though they can still attend to their own. In these cases immediately upon taking cold, the membrane lining the nose and throat are pressed into service; hot, scalding, irritating water flows from it, carrying off a portion of the impure matter. When the action of the skin is gradually lessened by lack of cleanliness, the effect is not so noticeable as when stopped by a sudden chill; but it is quite as serious in the long run. Many forms of chronic disease, which render life miserable and cut it off prematurely, begin in the first place with a deposit of waste matter in some location where it is carried, when Nature has failed to eject it from the body through the usual channels.

Vicarious Action of the Excretory Organs.—Checked perspiration is followed by a largely increased amount of urine, diarrhoea, or congestion of the lungs and air passages, with profuse flow of mucus. Should the kidneys suddenly become incapable of removing their portion of the wastes from the blood, a profuse perspiration tides the patient over the crisis, and he is saved. Inactive bowels are accompanied by a foul breath or offensive sweating, showing that the lungs or skin, and frequently both, are helping to remove the retained excretion. Night-sweats of consumption are due to the vicarious action of the skin; although they weaken the patient, yet they lengthen life by removing impurities with which the blood is overloaded, not only in consumption, but in malaria and every other disease in which they are present. Night-sweats are not healthy—far from it—and we would not have this point misunderstood; but they never occur except in what the doctors call a “crisis,” and they remove so much of the material that is acting as a poison upon vital parts, that life is prolonged by them.

Effect of Long-continued Vicarious Work.—The extra labor thrown upon any organ, when it assists a disabled one, does no harm unless it be too long continued.

The effort to dispose of wastes from the lungs, kidneys or bowels through the skin carries to it material that makes sores; these may be in the form of pimples, salt-rheum, boils or ulcers. Material from other organs carried to the lungs in greater quantity than they can dispose of is left in the air cells, filling them, and making hardened spots in the lung, into which the air can not go. This matter is in a favorable location and condition to nurture the germ of consumption, and is not an uncommon origin of this dread disease. The kidneys are no less endangered by causes which over-work them. There is another source of danger to these organs, which must not be overlooked. People who drink too little water, or beverages containing water, do not have the wastes dissolved, so that they can readily pass off through the kidneys; the consequence is, that the delicate cells of these organs become filled up. Have you ever tried to dissolve salt in whisky or alcohol? If so, you must have noticed that the salt settles to the bottom of the glass and stays there. Place the same quantity in water, it disappears; but on tasting the water you discover that it is salty, showing that water dissolves it. The larger portion of the solid matters taken out of the blood by the kidneys dissolve in water, but not in alcohol. Those who

drink little other fluid than alcoholic liquor lack water to wash the kidney cells out clean; consequently, they become filled, and after a time are permanently disabled. This is a common cause of kidney disease. Inactive bowels allow large quantities of fecal matter to remain in the colon, which hinder digestion and circulation, thereby injuring every organ.

Method of Purifying the Blood.—There is no other way by which we can remove impurities from the blood, except through the excretory organs. There are two things to be considered in doing this: 1. To remove present obstruction; 2. To restore disabled organs. In nearly every case where the blood becomes noticeably impure, the bowels are more or less constipated. The first thing to be done is to secure a free and thorough movement, which shall clear out the entire intestinal canal. The medicine selected should be one that will produce this effect without griping or irritation. For this purpose we know no better cathartic than Eilert's Daylight Liver Pills. Two or three of these pills taken at bed-time will be sufficient. The next part of the treatment to restore disabled organs requires time—from a few weeks to months, according to the duration of the trouble. *Happy Home Blood Purifier and Health Tonic* is a remedy which can be depended upon to purify the blood and restore the health. It contains ingredients that strengthen the nerves, stimulate and invigorate all the excretory organs, yet is gentle in action and not unpleasant to taste. It can not be reasonably expected that any remedy can permanently restore the blood to a pure and healthful condition, so long as the causes which led to its becoming impure in the first place are still acting. Remove these, and the treatment here recommended can be depended upon to cure the majority of diseases which result from retained excretions.

CHAPTER XII.

MICROSCOPIC GERMS: THEIR RELATION TO HEALTH AND LIFE.

The air around us, the water we drink, and our food, unless freshly cooked and still hot, are filled with tiny living objects, too small to be seen except by a microscope. Some of these are of vegetable, others of animal origin. The majority of them are harmless to man; a few varieties are not. The simplest form of an animal is the amœba, shown in the accompanying cuts. It has the power of chang-

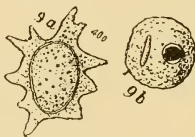


FIG. 13.

- 9 a. Amœba digesting its food.
9 b. Amœba resting, digestion complete.

ing its form at will, and we have shown two forms of it. Their size varies from $\frac{1}{1000}$ to $\frac{1}{40000}$ of an inch in diameter; therefore, they are invisible to the naked eye. They are found in all broths, gravies or teas that have not become putrid, also in milk; they are very numerous in the slimy covering of bodies or objects immersed in fresh or salt water; sometimes on moss or earth. Small as they are, there are found within them still smaller animals, called infusoria, which they have taken as food; they also devour minute vegetable germs that exist both in air and water.

The yeast plant, shown in Fig. 14, is a specimen of a very simple form of vegetable life. The difference between the yeast and the amœba, so far as can be detected by the eye, does not show to which form of life they properly belong, but they are distinct forms. The yeast plant possesses the remarkable property of using up or destroying sugar and nitrogenous matter, separating it into alcohol and carbonic

acid. In bread-making the dough is kept warm; this changes the nature of the starch in the flour, so that the yeast can seize upon it for the material of its own growth. The yeast grows and spreads through the dough in the same manner as mildew spreads through old bread or cheese, at the same time making carbonic acid and alcohol. The heat of the oven hardens the crust on top of the bread, preventing the escape of gas, and killing the yeast plant after its work is done. The heat also drives off the alcohol and expands the gas, making the loaf light and spongy. Germs play a very important part in our life,



FIG. 14.

Yeast Germs, or Seeds.

Yeast Plant growing.

although many of them are so small that a magnifying glass which will make one of them appear one inch in diameter would, if it could magnify a man in the same proportion, make him *eleven* miles high. Take a portion of earth, bake it, so as to kill all living things in it; then expose this burned earth to the air: in a very few days we shall find vegetable growths appearing on it that have sprung from germs or seeds falling upon it from the air since it was baked. Expose sweetened water to the purest air possible; in a short time bubbles will be seen on its surface, showing that a species of yeast has found its way into it, and is breaking up the sugar, making alcohol and carbonic acid gas. Later other germs take possession of it and change it into vinegar. There are other germs that grow only in the juices of animals and plants; some thrive in the juices of the living, others only in those of the dead. Some of these germs grow in the form of single cells, like the amoeba; others in rods, or chains, or threads. Any meat broth exposed to the air for a day will become cloudy and thick; but on examination with a microscope it will be found crowded with germs, called, according to

their form, bacilli, bacteria, microbes, etc.; all belong to the class of micrococci, just as flies, mosquitoes and bees, although very different, belong to the insect class. We are indebted to germs for our bread, cheese, vinegar, beer and wine. All germs do not flourish alike in the same material; the germ which transforms milk into curd would produce no useful effect at all if mixed with dough, while yeast added to milk produces a milk wine (kumiss) instead of a cheesy curd. Some germs will grow and develop only in a particular substance, or only under special conditions. This is a point of importance in relation to "germ diseases;" for, when exposed to them, it is by keeping free from the conditions in which they develop that we can be safe from infection.

Heat Destroys all Germs.—If the broth of which we have spoken be boiled and sealed up, so that no dust or germs can get into it, there would never be any change in it; but the least exposure, such as dipping in it a glass rod, touching it with the tip of the finger, although clean as we can make it, will start chemical changes and putrescence. If there were no germs, all putrefaction would cease—the earth would be covered with the corpses of men and animals. There would be no decay, no separation into the elements which compose them, and therefore no food for plants—nothing in the soil for them to live upon. If plants should cease to grow, there would be no food for animals—all creation would stop. The magnitude of the minute forces of Nature has often been illustrated by the coral reefs that are so slowly reared by the tiny coral which contributes its skeleton only to the structure, yet vast islands owe their foundation to this insignificant creature. The bed of the ocean is being so changed in form by it that science predicts a complete transformation of the surface of the earth at some distant period. Wonderful as this is, it does not compare in importance with the work done by the invisible living germs with which the air, the water and all living objects are teeming. There are not less than thirty varieties known and recognized as harmless to man; but it is by no means probable that these are all. Some of these produce a horrible odor; others have no effect on the senses, but their danger or harmlessness does not depend on the smell produced. Disease germs, when they are taken into perfectly healthy blood, do little if any harm, because they do not find it in the conditions suited to their growth and development; but if the blood contains impurities retained beyond the

time they should have been removed by the excretory organs, then the soil is ready for them to produce fermentation, putrefaction and death. Wherever foul smells exist, or any form of germ life grows, such as mold or mildew, there everything is favorable for other germs. An English surgeon, Professor Lister, has proven that the air in hospitals and sick-rooms contain germs which grow very rapidly when they fall upon an open wound; but by strict protection of wounds from such air and by perfect cleanliness he has had such remarkable success in the treatment of all kinds of wounds that he has revolutionized the practice the world over in this class of cases. We have every evidence that "splenic disease" in cattle, that horrible and fatal disease of man, "malignant pustule," or wool-sorters' disease, are all traceable to a germ origin. Silk-worm disease, hay fever, consumption, all have a similar origin, while it is strongly suspected that small-pox, measles, scarlet fever, diphtheria, etc., belong to the class of germ diseases. Whether they are caused by true animal germs, which grow and multiply at the expense of the blood and tissues of the body, or whether they are grafts—that is, portions of diseased matter thrown off from the skin, the lungs or other mucous surfaces, which, like the yeast added to the dough, cause fermentation—certain it is that in either case, the whole class of germ diseases or filth diseases are controlled by strict cleanliness and by disinfection, which means the complete destruction of the germ or poison which breeds sickness. The inducements for germs to develop are found everywhere. Among the favorite agencies for their growth are unclean water, milk that is drawn from cows kept in filthy stables, by unclean hands, and kept in an ill-ventilated place; overcrowding and consequent foul air in living rooms; decomposing animal and vegetable matter, faulty drains, careless disposal of slops and sewage.

CHAPTER XIII.

DISINFECTANTS.—ANTISEPTICS.—DEODORIZERS.

It is said that "dirt is only matter in the wrong place"—a manure heap is out of place under a window, notwithstanding the material forming it is very useful when applied to land. There are three things to do in regard to germs: the first is to destroy them so far as possible; second, to destroy what they feed upon; third, to destroy the channel of communication between them and the human body. Heat and corrosive chemicals destroy both the germs and the food that nourishes them, but it is not always easy to apply these effectually. The heat must exceed 212° , and be applied not less than ten minutes; and this is not always long enough. A dry heat of 240° will not scorch cloth or cotton. Steam is an excellent disinfectant, but when used to cleanse sheets or clothing from patients suffering with a contagious disease, it should not be allowed to escape in the room, for it may carry with it some of the germs that are not destroyed. Corrosive sublimate is so poisonous that it must be used with every precaution, and no solution containing it in ever so small a proportion should be left unlabeled, or where children can get it; as it is colorless, it may be mistaken for water. Disinfectants, antiseptics and deodorizers are frequently confounded, which gives rise to a false sense of security. A *disinfectant* destroys disease germs; an *antiseptic* retards their development; a *deodorizer* removes bad odors. Some drugs possess all three of these properties, when used in different proportions. An experiment will prove to which class a given article belongs. Take a bottle of sweet milk, and add to it the quantity of the drug to be tested in the proportion recommended for that particular chemical. If it be a disinfectant, the milk will remain sweet for months, even though the bottle be left uncorked. If an antiseptic only, the milk will remain sweet much longer than usual, but after a few days or weeks will become sour, and, later, putrid. If the drug be nothing but a deodorizer, the milk will undergo a change about as soon as if no chemical had been added to it, but it will not give forth the odors of sour and putrid milk. Deodorizers prevent de-

caying matter, which can not be wholly removed, from becoming offensive to the sense of the smell, and are very useful in the sick-room; but they must not be trusted to destroy the contagion, or prevent its being carried to others. Antiseptics help overcome unpleasant odors, and lessen the risk of contagion; they are of considerable importance, because many of them are not poisonous, and can, therefore, be used where a disinfectant would be dangerous. Disagreeable smells are a warning that something which will injure us needs to be removed. Many of the wisest sanitarians are in doubt as to whether disinfectants are really not of more harm than service to the world. They must not be used as a cloak for dust, dirt and neglect; they will not take the place of fresh air, sunlight, soap suds and the dusting brush. Disinfectants, to be of service, must be used in much larger quantities than is commonly done; they must be brought into direct contact with the germs to be destroyed, and kept in contact with them for several hours—in some instances for days. No subject has been more carefully studied during the last ten years than this one of disinfection, because to it we owe our safety when epidemic diseases prevail. We have every reason to believe that if disinfection were thorough and complete, cholera, yellow fever, typhoid fever, etc., could not spread. It has been found that materials which have a great reputation as disinfectants differ very greatly in power; that while some of them are to be relied upon to kill the germs themselves—that is, the bacillus, bacteria, etc.—yet the seeds or eggs of these germs are much harder to destroy. An experiment was made with the seeds (spores) of one of the most hardy disease germs, with the following result: The only substances that would completely destroy them within twenty-four hours are corrosive sublimate, one part dissolved in five thousand parts of water and sprayed over the germs; chlorine water; bromine, one per cent. in water; iodine water; and permanganate of potash, a five per cent. solution in water. It required two days for carbolic acid dissolved in water to destroy the most difficult ones; when dissolved in oil or alcohol it did not destroy them at all. It was found that the steam from water containing carbolic acid is much more effective than steam or carbolic acid alone. Water at 167° does not ordinarily affect disease germs; but if it contain carbolic acid it will destroy them in about two hours. The fume of burning sulphur or sulphurous acid has been generally advised to disinfect houses after contagious diseases, but it has been much over-rated. When the germs are dry, one per cent. of the vapor from burning sulphur will destroy

them in twenty minutes; if they be moist, in two minutes; but their spores, or seeds, from which new germs spring, are not destroyed by this exposure.

It is also found that the germs must be exposed directly to the fumes, so that in disinfecting a room the carpet, curtains, bedding or clothing may conceal and protect germs from the action of the sulphurous gas, unless they are arranged so that the vapor can pass through every part of them. To disinfect a room properly with sulphur, the windows and doors must be closed, a metal receptacle be filled with coals and sulphur be poured on them. A door should be left open for the person who does this to get out as quickly as possible, for it is unsafe to breathe the smoke; close the door, and do not open it for 24 hours. A better way to disinfect a room is this: Peel off the wall-paper and burn it; wet the floor and all wood-work with water; set stone or earthen vessels in different parts of the room and at different heights; fill with chloride of lime, and set bottles containing muriatic acid in this, so arranged that it can leak out a little at a time; leave the room instantly, for the fumes are unbearable; close all doors, windows and other openings for 24 hours; then open and ventilate, whitewash the walls, and the work is well done. There must be six ounces chloride of lime and ten ounces of muriatic acid (spirit of sea salt) for each cubic yard the room contains. Muriatic acid is a corrosive poison, and must be handled with care. An excellent antiseptic solution for the sick-room is a one per cent. solution of carbolic acid in soft water. It may be set about the room in saucers to remove odors from the air; the spoons, all utensils and the hands of the nurse should be washed in such a solution. Vinegar, salt, sugar, charcoal are antiseptics. All substances which remove or conceal foul odors belong to the class of deodorizers; and we would reiterate the fact that this quality does not make them a protection against infection. It is not well to use several kinds of disinfectants at the same time, lest they neutralize each other. Cream of tartar and soda are employed in cooking in such proportions that they unite to form the carbonic acid which is needed, but leave no residue to make the batter either sour or alkaline; two disinfectants dissimilar in nature may unite to form another article, differing as much from either as the carbonic acid gas differs from the acid and alkali which produced it, and in this change the disinfectant properties are lost.

Soiled garments, awaiting the washing, are saturated with mate-

rials given off by the body during the time they were worn. These are decaying and forming gases, which make the air unfit to breathe.

Stuffed furniture and carpets catch and retain dust, all kinds of dirt floating in the air, and disease germs. The space under beds should be free from boxes, trunks or bundles, so the air can circulate freely around them. It is singular that there are to be found families who are considered intelligent, yet use their beds as general storage-place for everything. In winter we have known people to pack bread and vegetables in the family beds to keep them from freezing during the night—the heat from the bodies of the sleepers being made to do duty in protecting these eatables from frost. It would seem as if every one ought to know that where the heat from the body can penetrate, there the gases and vapors given off from the bodies can also penetrate. As these are given off because they are the wastes, and because their presence in the body will make it unhealthy, it is evident that neither sleeping apartments nor beds are proper storage-places for food. Feather beds and flannel collect and retain impurities and disease germs. In many families feather beds are handed down from one generation to the next, with very rare cleansing. The family is born upon them, the sick are confined for weeks and months upon them, one after another die upon them; they are hung out to air a few days, then the family go on using them as before. There is no question among physicians but that some diseases, supposed to be hereditary, are handed down from one member of the family to another through the germs of that particular disease stored in the feather bed. In one family of our acquaintance, who occupied the old homestead, and used the same furniture and bedding that the father and grandfather before had used, with such additions as the times demanded, was sadly afflicted with consumption. There had been a death or two from this disease in each family who had occupied the house, but the one we speak of was the most unfortunate. The mother first died, and was followed one after another by two daughters and one son. After the funeral of the son, the father returned to the house, set it on fire, and burned it with all its contents. He would permit nothing to be removed from the house, and as it smoldered in ashes, he exclaimed, "There! I've ended consumption for this family;" and, sure enough, time proved that he had, for the remaining three children, as well as the father, are now, many years after the event just described, living and in excellent health. The use of vessels for slops in sleeping-rooms is productive of injury to the weakly. Even when tightly cov-

ered, there is some evaporation, which lodges in the curtains, the bedding, the wall-paper, and gives a disagreeable odor to the room, quickly noticed by those who are not used to it. Those who sleep in such air have the sense of smell blunted after a while, so they can not detect the filthy odor. Cellars are reservoirs of bad air. Decaying vegetables and moisture, with lack of sunlight, are certain to make the air unwholesome. Air passes through the floor to the rooms above, carrying with it the vapors which collect in the cellar; such air is most injurious to little children playing on the floor, and nearly as bad for those who spend most of their time in the house. Impure air in poorly-ventilated rooms is the chief cause of the difference in health between the women and the men of a family; the latter spend much of their time out of doors, or in other air from that at home, and escape some of the worst consequences of poor ventilation. To make cellars healthy, they should be well drained, and if damp after that they should be cemented. It is not generally known that in loose, porous soils, gases will penetrate a cellar from privy-vaults or cess-pools some distance away. We have known in Chicago a basement to become offensive from house-gas, which had found a way through the soil from a broken gas-pipe fifty feet distant, and two or three feet under ground. Milk absorbs gases and smells of all kinds, yet nothing is more common than to find milk set in an unclean cellar for the cream to rise. A bad odor means the presence of germs or gases, usually both, neither of which are fit to enter the human body, and that is why Nature made these offensive, and gave us the sense of smell to detect them. If we ignore Nature, and submit ourselves to foul air until our sense is dulled, that does not save us from the consequences. Many a case of malaria owes its origin to a filthy cellar. It may be well to add that an orderly cellar is not necessarily a clean one. It can not be kept clean unless it is swept, and all decaying substances taken out; or, in other words, it can not be clean without being kept in good order; but it may be free from dust, cobwebs, rotting fruit and vegetables, yet be unhealthy for want of fresh air. This must be provided for by ventilation. It is not enough to open the hatchway or door; windows must be open on every side to make the air circulate through it. There is scarcely a day throughout the year when these may not be opened at mid-day to advantage. Rheumatism is another complaint which owes its origin to a damp cellar much oftener than is commonly suspected.

A common coal-oil lamp consumes as much oxygen per hour as a

man; when it is turned low, it sets free gases to pollute the air. Leave a lamp turned low an hour or two in a closed room, then return, and you will open the door and windows at once, because the air is so offensive; yet nothing is more common than to turn a lamp low in a sleeping-room at night. This is an especially bad practice where there are children to breathe the fumes, because it irritates their sensitive throats and noses, making them more liable to catarrh and sore throat. A gas-burner also destroys a large quantity of air; if it is a poor one, it will use up as much as four men: therefore, the air of rooms in which lights are burning need more frequent changing of air or better ventilation than others. A good plan for lighting a sick-room without rendering the air impure, is to take a starch or raisin box, set the lamp inside and place the box outside the window, with the open side facing the room. It may be fastened to the window-casing with a nail, or tied to the blind.

CHAPTER XIV

OUR NATIVE ELEMENT, FRESH AIR.—VENTILATION.

So long as man dwelt in a tent, and led a wandering life, there was no necessity for concerning himself about providing a supply of pure air to breathe. Later, when the first rude houses were constructed, with a large opening in the top for the smoke to pass out, there was little interference with abundant exchange of air between the inside and outside of the shelter he had provided. Houses with ample fire-places and large chimneys next came into fashion. These were healthy, because neither fire-places nor grates will “draw” well when there is not pure air to feed the fire—pure, in this case, meaning that which contains a due proportion of oxygen. Air may contain oxygen enough to make a fire burn briskly, and at the same time be unfit for human beings to breathe, because it is loaded with gases or germs from decaying vegetable or animal matter. Later, stoves were invented, and a questionable benefit they may be considered as now constructed. It is true, they save fuel; they make the temperature of a room more even throughout, therefore more comfortable; but they do not provide for changing the air in our rooms. Our houses are now made snug and comparatively air-tight, and a new subject demands our consideration—namely, that of *ventilation*. Our ability to change the air in our rooms depends upon the simple fact that hot air is light, and cold air is heavy. Everyone knows how offensive a stagnant pond becomes, and that to make it pure it is only necessary to set up a current of water, running *through* and *out of* it. To purify the air of a room, fresh air from out-doors must be let in, and the foul air let out. If this were all there is of ventilation, it could be very quickly accomplished by opening the doors and windows, when the air of the room would be exchanged for that from outside—quickly, if the difference of temperature be considerable, very slowly when they are nearly the same. Unless acquainted with this fact, one is likely to be puzzled to find that sometimes the usual airing fails to purify the rooms.

The real problem in ventilation—the one which architects and

builders have never satisfactorily solved—is to continually renew the air of our living rooms, without chilling the people inside, and without wasting heat. If outside air in cold weather be let in at the top of a window, it falls down on the head, producing catarrh, colds in the head, neuralgia, deafness or sore throat, according to the age and constitution of the person exposed. If it comes in at the bottom of a window, it chills the feet. While we can endure in safety exposure to great extremes of heat and cold, it is remarkable how serious an effect is often produced by a current of cool air striking a small portion of the

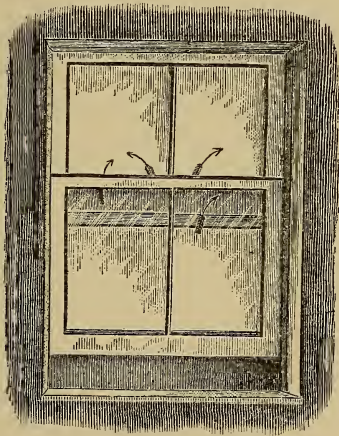


FIG. 15. WINDOW VENTILATION.

The dark space beneath the window-sash is intended to represent a strip of board about four inches wide, which exactly fits into the window-frame. This keeps out rain and snow, but lets in a supply of air between the sashes in the direction shown by the arrows. Another strip may be fastened above the upper sash, giving a greater inlet for air.

body. Draughts are, to the young and to the aged alike, more dangerous than any other peril to which they are exposed. Air which has been breathed over and over again poisons the blood. Lack of ventilation, with filthy surroundings, led to those terribly destructive epidemics of the middle ages. It is stated by historians that more than one-half the population of Europe was destroyed by that horrible disease known as the "black death," during the period in which it raged most extensively. It is now believed that foul air, together with

polluted water, gave it the terrible fatality for which it was noted. At all events, men were driven to clean up their cities, their premises, their houses; they were led to observe the conditions of air, and earth, and water. Increased cleanliness and ventilation have put an end to the more terrible ravages of pestilence, and placed it under man's control. There are various plans for securing fresh air, some of which require the advice of an architect, in order to adapt them to dwellings. A few of the more simple ways will be described, which require no special outlay, and no great exercise of ingenuity. The arrangement of the window, as shown in Fig. 15, while it does not supply fresh air as plentifully as needed, when it is the only source of ventilation, is much better than none at all.

Another plan is to be preferred when the air passages are very sensitive to dust, and the outside air is not free from it. Holes are bored through the bottom piece of wood on the top sash, and filled with a little loosely packed cotton batting, to strain the soot and dust out of the air as it comes into the room. These must be changed often, or they will become clogged with dirt and shut out the air entirely. Venetian blinds make good ventilators, if the top sash of the window be lowered, and the slats be made to slope upward, so as to direct the in-coming air to the top of the room. Another excellent plan is to have a double lower sash, the outside one fitting into the window-frame exactly under the upper sash. An opening about 3x8 inches is made in the bottom piece of the lower sash, which is covered by a slide that can be opened or closed inside the room. Perforations are made between the parallel strips of the upper and lower sash to let the air through.

Some of the Ways in Which Air is Made Unfit to Breathe.—A frequent source of ill-health, more especially to women and children, who are confined to the house during stormy and cold weather, is the stove in ordinary use. There are two sources of injury from stoves: the one is the dryness of the air produced by stove heat; the other, the escape of dangerous gases generated within the stove. A stove heats a room better, in proportion to the amount of fuel burned, when it is kept at a low degree of heat; this is one of the reasons which makes the base-burner stove popular. A basin of water, placed where it will evaporate, partially replaces the moisture dried out by the stove. A long pipe helps economize fuel, by offering

a larger heating surface, but at the same time it creates a larger drying surface. The smell of cast iron is due to the charring of organic matters floating in the air of the room.

A wood stove, shut up tight, becomes a charcoal-making apparatus; a quantity of carbonic acid gas is formed, which is liable to escape, unless the stove is very well made, with nearly air-tight covers and doors. This gas poisons persons occupying the room, the same as it does those who enter old vaults or wells where it has accumulated. Carbonic acid gas, escaping from a stove in too small a quantity to be noticed, is still capable of producing dullness, headache, irritated throat or cough in those who breathe it. There is a very deadly gas, called *carbonic oxide*, formed in coal stoves. It is produced by the imperfect burning of coal, and may be seen in base-burners as a pale blue flame, sometimes playing over the surface of the coal. This gas, mixed with the air, so that only one per cent. of it is breathed into the lungs, kills quickly. One-half of one per cent. produces serious headaches. A loose-jointed stove, in which hard coal is burned, is a dangerous companion. A red-hot stove is also dangerous, whatever be the fuel inside, because the oxygen of the air unites with the carbon in the iron at red heat, producing a small amount of carbonic oxide. There is more danger from a cast-iron than from a wrought-iron stove. The danger is diminished when it has a good lining of fire-brick; but a stove should never be allowed to become red-hot. Dickens called American stoves "red-hot demons;" however, it is only when red-hot that they deserve the name. A good draught, with dampers open, carries away safely the most poisonous gases; it is where dampers are closed, or the draught is cut off by an obstruction in the flues, that they become sources of danger. Recently, in this city, a family were nearly smothered in their sleep by the gas, which escaped from a stove with dampers closed and door left open. A neighbor, living in the same house, smelling the gas, traced it to their door, forced an entrance, and found the family insensible. Everyone ought to know that it is unsafe to sleep in a room containing a coal fire, or a tightly-closed wood fire, without having a window slightly open, or some other means of ventilation. A bedroom opening into such a room is equally dangerous. In the following instance the stove was a first-class one, in good order, doors and dampers closed. Mrs. A. retired late, after her family was asleep, having first closed all ventilators, contrary to her custom, because the weather was intensely cold. About two hours later she was awak-

ened by the peculiar snoring of her child, who slept in the same room. As she arose she was seized with dizziness, and fell to the floor; she called her husband, but, failing to arouse him and suspecting what had happened, by a great effort she managed to make her way to the outside door, and open it; the fresh air immediately revived her. She quickly carried her child to the door, and, laying it in the draught, tried again to awaken her husband; failing in this, she called a neighbor, who summoned a physician. By the persistent use of artificial respiration the man was restored, but was severely ill for many weeks afterward. The wife and child recovered in a few days. The fire had become clogged, so as to completely prevent the escape of the gases by the pipe, and they were thrown into the room.

Last winter a young couple, who had been housekeeping but a week, were found dead in their new home, under these circumstances: In the kitchen adjoining their bedroom stood the cook-stove, with two covers off. It was very cold weather; the windows and doors, except the one between bedroom and kitchen, were closed. All preparations were made for breakfast; the covers had evidently been removed to hasten the cooling of the stove, as the kindlings were ready to be placed in it for the morning fire. The deadly coal-gas from the smouldering bed of coals had done the deed. Old stoves, when cracked, broken or warped, are never safe. Women who seldom leave the house in the winter, and suffer from poor health, which improves in summer, not unfrequently owe their ill health to the stove, which has served too long for the welfare of the family. While on this subject we must call attention to the dangers of house or burning-gas. In these days it would seem scarcely necessary to warn anyone against "blowing out the gas," were it not that we are continually hearing of deaths caused by this act. Gas escaping from the pipes rapidly renders the air unfit to breathe. Every burner should be provided with a "cut off," that will stop when the pipe is closed. Unfortunately, the best of them become unreliable when the fixtures are old, and in turning out the light the pipe is likely to be opened again, leaving the gas to flow into the room, the same as if it had been blown out. It is a prudent plan, especially in a strange room, to hold a lighted match to the burner after the light is out, unless perfectly certain that there is no escape of gas. Should the light be accidentally blown out while turning it off, light the gas again and then turn it out. Another source of danger, not as well known to those who habitually use gas as it

should be, is this: the pressure is sometimes varied or adjusted at the gas-works during the night; while this is being done, it is liable to be momentarily lessened, when all lights that are left burning low will go out, leaving the pipes open for the gas to escape when the pressure is increased. A young man came near losing his life recently in this city from this cause. He turned his light low when he retired; that was the last he knew until he was roused late the next morning by the physicians working over him to restore him to consciousness. If he had not recovered, he would have been considered a suicide. It is probable that more than one has been branded a suicide, when found dead with gas-jet open, who never thought of self-destruction. House-gas, when mixed in certain proportion with common air, becomes very explosive. A young clerk in an express office in Chicago had this fact impressed upon his memory in a way he is not likely to forget. He noticed one morning, on opening the vault in which the safes are kept, a very strong odor of gas; lighting a match to see where it came from, a tremendous explosion occurred, which nearly wrecked the building, and destroyed the office. Strangely enough, he escaped without serious injury. It is not surprising that persons who are acquainted with gas only as used for lighting should blunder in this way, when we notice that workmen hunt for leaks with a lighted match—sometimes when the overpowering odor shows that it is escaping in large quantity. The wonder is that explosions are not more frequent. Now that gas-wells are becoming so numerous, deaths from gas are likely to multiply. In some localities gas is odorless; this is very dangerous, because there is absolutely no warning when the pipes leak. Last year, in an Eastern city, several inmates in one house were suffocated in the day-time by the escape of odorless gas into the room which they occupied. Numerous explosions from the same cause have already been reported; and chemists are seriously considering the feasibility of passing the gas, before it enters the mains, through some substance to give it an odor. In the mean time the only safety lies in free ventilation, to prevent its accumulation in quantity sufficient to do serious mischief.

Many a family has worked long and economized closely to build a new and more commodious house, to find that, when they abandoned the old one with its fire-place and open crevices, which let in air too freely for comfort, they left their health behind, because fresh air is scrupulously kept out, lest it bring dust and flies. A grate permits nearly ninety per cent. of the heat to escape up chimney, but it has

this advantage—it changes the air in the room very quickly; for if no air can get into the room except down the chimney, then the smoke will come down with it, which is one cause of smoky chimneys. A grate, then, is an excellent substitute for a fire-place; but, unfortunately, it is not economical, and the high price of fuel in most localities makes it necessary to employ the stove. The new air-tight house, with the heating stove to make it comfortable, is an expensive luxury in the end to people who do not realize the necessity for providing a frequent change of air throughout the house. It is true, the walls are not air-tight, and some air finds its way through them; this is often considerable on the side against which a strong wind blows. More comes in around the key-holes, doors and windows; but this supply is not sufficient to keep the inmates healthy. When letting in fresh air it must be pure air; if it come laden with the vapors from pig pens, barn-yards, manure heaps, stagnant pools or privies, it is poisonous to the lungs, and may produce sickness. The air from decaying plants is as injurious as that from dead animals; swill pails and garbage barrels with their decaying masses of potato peelings, cabbage leaves and other refuse should not be allowed to stand in the kitchen, or so near the kitchen door that the fumes can be wafted in when the door is open. At least one epidemic of diphtheria was apparently caused by decaying cabbage. It was confined to the houses on the windward side of a large cabbage patch, from which the salable heads had been taken away, leaving the stumps and imperfect heads to decay where they stood. The smell was very annoying for some weeks before diphtheria appeared in the neighborhood.

Intelligent persons shun the dirty and diseased; they will not wear a garment that has been worn by another; they avoid open sewers and all matters that offend the sight, smell, or contaminate the air; they are particular that their drinking water is pure and their houses well ventilated, yet readily expose themselves to a source of infection and filthiness, the effect of which they often do not appreciate, and if they did, they are powerless to alter the circumstances. We refer to going to public places where are assembled a crowd of people in an illy-ventilated hall, some with dirty garments, many with dirty skins, sending out into the air by evaporation animal matters in all stages of decay, while lung wastes are being given off by all present. Diseases of various kinds are there; every breath that is drawn carries into the air passages a miscellaneous assortment of germs, gases and organic impurities.

This state of things can not be remedied until the public generally awaken to the danger. It is a recent discovery that a bacillus of peculiar species is found in the lungs of every person suffering with consumption. This germ is found in their spittle and their breath. No matter what other signs of consumption may be present, the case is not now considered hopeless so long as these germs have not found their way into the lungs. It is quite possible that persons in feeble health may become infected in a public gathering by breathing in germs fresh from a consumptive's lungs. The more we learn about diseases the greater the number we find, not ordinarily considered "catching," that are actually spread through the air, the water and infected clothing.

Railway cars, steamboats and street cars often become infected with small-pox, or other epidemic diseases; they are just as liable to be infected with those which are not strictly epidemic, but none the less fatal.

The cause of bad smells in sleeping-rooms in the morning is the matter thrown off from the bodies of the sleepers during the night. It clings to the walls, the curtains, the carpets and bedding. It is poisonous matter, because all substances rejected by the body, after having served their purpose in it, must, like the body itself, be returned to dust, to again undergo the transformation through vegetable and animal life in the eternal round of matter of which the human body forms a link. It is unhealthy to sleep in rooms so poorly ventilated that there is any bad smell in the morning. In a certain school for boys, the sleeping-rooms were large, containing about twenty cots apiece. In each was a chimney with an open grate, which was depended upon to ventilate the room during the night. All the boys in one room became sick at the same time; they had a severe fever and dreadful headache; some were delirious. As the others all remained well, the ventilation of the sleeping-room was at once suspected of being at fault. The chimney was found stopped up tight by some falling bricks and mortar, that were probably dislodged by a storm two weeks previous to the outbreak of the sickness. They were immediately placed in a well-ventilated room, where they improved at once, although it was several weeks before they fully recovered.

When one is taken ill friends change the bed-clothing, cleanse the skin, ventilate the room; but as soon as recovery follows, the patient goes back to his old habits. It is said that the only occasion on which a Chinaman ever takes a bath is when he is sick; then he soaks and steams

himself thoroughly. It is much the same way among ourselves. Prevention is far better than cure, because it is easier and more certain to accomplish what we aim at. Breathing impure air is a frequent cause of scrofula. Children should not be allowed to form the habit of sleeping with the head under the bed clothes; in this way they are constantly breathing in the effluvia given off by the body. There is nothing more pernicious to the health of the family than the overcrowding of the bed-room. It is astonishing that families, educated in our public schools, and intelligent in other respects, will show so little regard for comfort in their sleeping arrangements. It is not uncommon to find in all parts of our land, in both town and country, small bed-rooms with windows always closed at night, and one bed occupied by parents and two or three children. When the children do not occupy the bed with the parents, they sleep in a trundle-bed, where they receive the carbonic acid gas which falls from the lungs of the sleepers in the bed above them. As if this were not enough to render the room unbearable, there is ordinarily a vessel containing urine and a basket of dirty clothes to still further pollute the air. Scrofula is a disease that originates in filth, and especially in foul air. It need not excite surprise that the disease is common in children who are reared in homes with sleeping apartments of this description. Physicians have a most delicate task to advise in regard to patients in such families. To suggest that the sleeping arrangements are faulty is liable to be construed into a reflection upon the neatness of the head of the domestic management, and nothing is more quickly resented. Kind reader, if there is ill health in your family, especially if of a chronic kind, or if some member is continually ailing, examine your house and surroundings with unprejudiced eyes, and see if there be not a fault that needs correction before blaming your physician too severely for not accomplishing the impossible—which, in this case, means overcoming with medicine the effects of daily and hourly disobedience of the plainest laws of health.

CHAPTER XV.

DRINKING WATER AND DRAINAGE.

The quality of drinking water and condition of the soil around a dwelling-house have a great deal to do with the health of the family.

The ancients made wonderful provision for a water supply in their cities; the Romans thought 300 gallons per head necessary for each day. There is no city of modern times so well provided with water; while, taking the country through, the supply is meager compared with that which dwellers in our cities have. There are certain qualities which drinking water must possess to be healthful; it should be clear, transparent, colorless and contain no sediment. It should taste fresh, but neither salt nor sweet; it should have no smell when first drawn, nor after standing several days in the air; yet, water which answers all these conditions may be unfit to drink; it may be clear and sparkling, yet dangerous. The most scrupulous care must be used to protect the sources of the water supply from being poisoned with animal or vegetable matter, or by the refuse from factories. Our cities mostly depend upon rivers, lake, springs and artesian wells for their supply, while the country is dependent upon springs and surface wells. An *artesian well* is one which is bored through the various layers of soil, clay and rock until it strikes what are called the "water-bearing rocks;" the water has trickled down to that strata from a great distance, and is very thoroughly filtered, although it sometimes contains minerals washed from the rocks through which it has passed. A flowing well is one in which the source is higher than the outlet. A *surface well*, however deep, is one which gathers water from the soil adjacent to it. During a rain-fall the water filters down through the soil, until it reaches a layer of heavy clay or stone, which it does not pass through, making an underground pond or stream, according to the "lay of the land."

The ordinary well is a hole about three feet in diameter, dug through the soil down to this collection of water. When it is cemented from top to bottom, as it ought to be, no surface water can flow into it

until filtered by trickling through the soil to the bottom of the well. If it be deep, such water is very well purified; but this is not true of a shallow well, unless the soil surrounding it for many yards in every direction is clean. Slops, manure or any filth allowed on the ground within many feet of the well will be washed down into the underground reservoir during long rains. The practice of washing dirty objects near the well, at the same time allowing the water to soak into the ground, is a certain way to pollute the well itself. Disease germs have been known to find their way into drinking water by throwing the contents of the wash-tub, in which clothes from sick patients had just been washed, into the back yard, at what was supposed to be a safe distance from the well. The practice of throwing kitchen slops out



FIG. 16. ARTESIAN WELL.

This illustration shows an artesian well, bored through a great depth of rock to water-bearing strata. A surface well is also shown, which is sunk in the same kind of water-bearing earth, at a place where it reaches nearly or quite to the top of the ground. While filth may readily be washed down through this material into the surface well, it must be carried so far to reach the supply of the artesian well that it is thoroughly filtered, and there is little probability of the water being contaminated.

upon the snow all winter has been believed to be harmless, because the cold was supposed to destroy all decaying matter, or, at least, all power it has of doing harm. The microscope has lately revealed the startling fact that some disease germs are not killed by freezing. The germs of typhoid fever have been found alive after thawing the block of ice in which they had been incased for months, and capable of producing the disease in animals in which they have been inoculated. The reader has, doubtless, seen back yards in which slops, kitchen refuse and all kinds of filth have been thrown during the winter, until the mingled snow, ice and animal matters formed a heap much higher than the top of the well in the same yard. The spring rains can not at first pass through the ice, and naturally run off into the well, dissolving and carrying with them a portion of the refuse.

At the approach of spring, when the days begin to grow warm, the hearty winter diet containing too large a proportion of heat-making food for the new season, produces a sense of languor or laziness; to

this is added the blood poisoning by impure water, made impure in the way suggested; therefore, it is not strange that spring is looked upon as an unhealthy season. This time of year is just as healthy as any for people who adapt their diet and dress to the weather, who breathe pure air and drink pure water. The soil of marshy locations contains a large amount of decaying animal and vegetable matter, which is dissolved and held in solution by the water found in those places; hence, that which is used for domestic purposes is liable to produce ague. A striking example of the effect of such water occurred a long time ago. Three ships started from Algiers, having 800 soldiers aboard. On one



FIG. 17.

This illustration shows a level surface of ground, with nothing to mark the direction of the natural drainage. The water-line shows its direction. The well being located so that the underground water flows past it to the cess-pool, or vault, is in no danger of contamination from that source during high water.

of these ships were 120 men, of whom 13 died; of the remainder, 98 landed at Marseilles with the ague. None died or had ague in the other ships. It was found that part of the water on the unfortunate vessel was drawn from a well in a marshy locality, near the harbor from whence they started, while the water supply for the others, and a portion of this ship's supply, were brought from a distant spring. Those who escaped sickness drank none of the marsh water. The water of wells in good soil, and originally of excellent quality, may become polluted without this fact being suspected, until malaria or an outbreak of fever appears among those dependent upon it.

It has been considered very mysterious that ague has, of late years, often appeared in communities where it was formerly unknown. Some have tried to account for it on the supposition that atmospheric conditions are responsible. The fact is, the change is due to accumulated filth. A new farm is settled for the first time, a well is dug in a good place, the ground is packed hard, so that surface water does not penetrate it; the earth is clean and free from vegetable or animal matter, the clay from the bottom of the well being commonly packed

around it. The privy is placed at a distance supposed to be safe, the drain, or cess-pool, is also at a distance from the well. The premises are kept clean, and for a long period such a place will remain healthy. The family grow up and separate; others occupy the place. Each family contributes to the pollution of the premises. The drain, or cess-pool, in time permits some of its contents to ooze through into the soil; the rains carry it farther and farther away. The privy vault also permits its contents to ooze out. Slops are thrown upon the ground around the well. The soil is one of the best disinfectants in the world, but it must be renewed by turning it up and exposing to the elements, or its power to disinfect will be lost. Charcoal is in some respects a stronger disinfectant than earth, yet one pound of charcoal can purify only about sixty pounds of water, when it must be exposed to air and heat to restore its power. In time the soil all around the well, and to a considerable depth, becomes saturated with substances which the soaking rains of spring or fall wash into it. Malaria then becomes prevalent among those who use the water from this well.

An outbreak of sickness, for which there is no apparent cause, is nearly always due to a sudden pollution of the water by a broken drain pipe, or an open communication between the privy vault and the well. On one occasion typhoid fever, in its most virulent form, broke out in a farmer's family. The members of this family were remarkably strong and healthy. Nearly every one was attacked by the disease the same week. It excited almost a panic in the settlement; and, after two or three neighbors who had assisted in caring for the sick were also seized with the fever, it was almost impossible to secure help. It was years ago, when very little was known of the cause of typhoid fever, and the manner in which the infection is conveyed was still a disputed point. Among other tests employed to discover the origin of the disease, peppermint was thrown in the privy vault; after about half an hour water drawn from the surface of the well had a distinct odor of peppermint, showing that fluids from the vault trickled through the soil into the well. The latter was closed, and all water used in the house was brought from a distant spring. There were no more cases of the disease, and all except one of the family recovered. Afterward, in digging down to discover the cause of the trouble, a loose sandy layer of earth was found several feet below the surface, tapped both by the well and the vault. A heavy rain, which had occurred a short time previous to the outbreak of the fever, had probably washed out a portion of the

sand, making an open passage between them. This was less likely to be suspected, because the house was located on the highest point, the well near it; and down a slight incline, about 75 feet distant, was the privy. Looking at the top of the ground it seemed that the drainage must be away from the well, but such was not the fact. Only a little more than 100 years ago, ague was so prevalent in many parts of Great Britain that an attack was looked upon as a necessary evil, from which there was no deliverance. In consequence of draining the land and removing dung-hills away from the houses, those now living on the same soil do not have ague at all. Soil itself is an accumulation of decayed or decaying organic matter; the thicker and richer it is, the more of such material it contains. New, shallow wells, fed from surface water, are prolific sources of malaria, as the new settlers upon our Western prairies have learned to their cost.

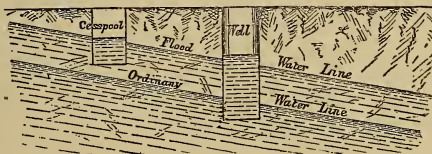


FIG. 18.

We have here another level surface, the ground presenting the same appearance as in Fig. 18. At the usual height of the underground water, the well is in no danger of contamination from the cess-pool, unless the contents of the latter ooze through its wall, when they will naturally drain towards the well. During high-water, the drainage from the cess-pool is almost certain to be carried into the well.

Deep wells, thoroughly protected from an influx of surface water, may be expensive, but they cost less than sickness. One of the smaller cities of Indiana was formerly unpleasantly noted for the prevalence of malaria. The citizens constructed water-works, bringing their water from distant springs, because the well water was of poor quality. Malaria was unexpectedly banished from their midst—a convincing proof that in that locality at least, impure water produced malaria. Epidemics of cholera have taught the world important lessons as regards water supply. For example, in Glasgow in 1854, no less than 3,886 people died from cholera. The city at that time was supplied with river water. In 1866 the city supply came from Loch Katrine, pure and undefiled; that year cholera carried off only sixty-eight victims.

Water that comes from surface soils, loose sand and soft sand-stone

is almost always impure. A surface well may be known by its filling up rapidly during rainy weather; if fed by springs or deep underground reservoirs, it remains at nearly the same level the year round. Spilling water at the well, so that it finds its ways back into it, is a bad practice, because it will carry with it dirt, etc. A drain, well paved to prevent leakage, should slope away from the well to carry off the waste water. Chalk and limestone formations furnish water that is very hard, but otherwise pure. It forms a coating inside the tea-kettle; an oyster shell kept in the tea-kettle will collect the sediment and prevent its forming on the kettle. Water from soil that contains much magnesia produces a swelled neck, or goitre, in some persons. Rain water is often very impure. It washes the impurities out of the air, and also is further contaminated by bird-droppings on the roof and in the eaves-spouts. Filtering is a good method of purifying water when the filter is kept clean. When cholera or other epidemics are about, all water should be boiled before using or filtering. Let it cool before putting it in the filter. *The taste, sight, or smell is not to be depended upon to detect impure water.* Many contagious diseases are carried by water. Rats, worms and flies revel in filth; they go about trailing it along everywhere, polluting not alone the water, but the air and the food which they run over. Milk is unfit for food when drawn from cows that are compelled to drink filthy water.

New Orleans, in its early days a hot-bed of disease—a city peculiarly fatal to Northern people—has been transformed into one of the healthiest of Southern cities, partly by improved drainage, but mainly by the exclusive use of rain water for all domestic purposes. Immense cisterns on the house-tops, or on an elevated scaffold, collect and hold the supply, which is filtered before using. All localities where good well water or clean springs are not found should be provided with cisterns. When the roofs collect the supply for the cisterns, the pipe leading to the latter should have a loose section, which can be turned so as to carry the water which first runs off the roof into the drain. As soon as the water looks clean, it can then be allowed to run into the cistern. Filters are necessary to make rain water palatable or healthful; but too much confidence must not be placed in them. They need care, and occasional renewal of charcoal, to keep them in order. On one occasion an epidemic of typhoid fever was traced to an unusual cause. The locality was a college town, dependent upon cistern water, and where many students boarded in private families. A student, at the opening

of the year, came to the town, sick with what proved to be typhoid fever, which was recognized by the attending physician in time to send him home. He was at his boarding-place probably not more than two days. It happened that the chambermaid, unknown to her mistress, had adopted the plan of throwing the slops from the boarders' rooms out of a back window, where a small quantity fell on the kitchen roof. The rain washed the roof and flowed into the cistern; the filter had been used a year or more without attention, because the dealer who had furnished it assured the good lady that it needed no care, but was "absolutely indestructible." Every member of this family suffered from an attack of typhoid fever; those who came to care for the sick and drank the water also were infected. The investigation that followed proved the facts to be as stated.

Filters.—It is very unsafe to trust to a filter, without knowing whether it is properly constructed. Many of the devices offered for filtering water are mere strainers. The dangerous germs which introduce disease into the blood are many times smaller than the smallest mesh in the finest strainer, therefore will pass readily through. A filter must do something more than strain. It must let the water pass very slowly; it must break it up into very fine drops, because the purifying is done by oxygen, and each atom of water must be exposed to it. It has been estimated that one cubic yard of sand contains particles enough to make 2,500 square yards of surface; the amount of water a cubic yard of sand will hold makes a film only $\frac{1}{140}$ of an inch thick over this surface, when it is brought into closest contact with oxygen, which, as we have previously found, speedily destroys the poisonous principle of organic matter. The air in the filter provides some of the oxygen, but the charcoal furnishes the greater part. A filter which is used a long time without cleansing accumulates impurities from the water passing through it, because the oxygen is not renewed as fast as it is used up. These not only form a slimy coating over the particles of sand and charcoal, but sometimes breed worms. The following directions for making filters and keeping them in order may be relied upon to secure pure water:

French Filter.—Take a stone churn holding about ten gallons (a keg of equal size will do, but is apt to taste of wood); put in a tin stop-cock about one inch from the bottom, and, a little above this, an earthenware plate, pierced with small holes, like a sieve. The conical shape of the jar will hold this in place. Upon the plate lay clean, dry

small pebbles for an inch; then lay upon this an inch and a half of dry, clean, coarse sand; and upon this a half-inch layer of charcoal in small lumps; and upon the charcoal an inch of fine sand. The whole will settle together into a layer three inches thick. Then top off with pebbles as large as an egg, to prevent water, as it is poured in, from displacing the filtering substance below. Cover the jar, and the filter is complete. It will supply ten or twelve persons plentifully. The charcoal should be changed two or three times a year; at the same time take out the sand and pebbles, wash and scald them, and dry in the sun.

Haskin Filter.—Mr. Haskin, of Fordham, N. Y., has described a filter that can be made for less than two dollars. He has used one for ten years. He says that, previous to using it, his family had fever and ague continually, but have been entirely free from it since. The articles needed to construct it are as follows: A clean whisky barrel, a bushel of clean sand, a bushel of white stone-roofing pebbles, a bushel of charcoal, a wooden barrel faucet, a false wood bottom, which exactly fits inside the barrel, nine inches above the lower one. Perforate the false bottom with ten half-inch holes, and cover one inch deep with white pebbles; next with a layer of sand, then with a layer of charcoal; repeat the operation, making six layers in all, with a thick layer of pebbles on the top. Make a wood cover to the barrel, insert the faucet an inch above the lower bottom, and the filter is complete.

Sites for Dwelling Houses.—The condition of the soil around the dwellinghouse is scarcely less important than the water supply. It is not enough that garbage of all kinds be prevented from accumulating upon it. Most people at this day understand the risk of allowing this, but the drainage of the soil is not deemed so necessary. If the location be naturally damp, it is all the more important that drains be made that will take away the surplus moisture as well as the water which falls during a shower. Pools of water allowed to stand become stagnant and breed fevers. Consumption is partial to damp locations. As an example of what may be done to control this scourge, we learn, from the American Health Reports, that in places in New England where this disease was formerly very prevalent, it is at present almost unknown, owing to better drainage and more care in selecting the site for dwellings, as well as to improved hygienic habits. The early settlers looked mainly to present convenience in placing their houses; they built near springs, or in shaded locations, beside

hills or among trees as a protection against wind and sun. The former location was apt to be damp from abundance of water, the latter from too little evaporation; for, whatever obstruction there may be to the free play of the wind, or the bright rays of the sun, checks evaporation of the moisture on the surface of the ground. In connection with this subject the following pithy truths are so admirably expressed by Dr. Hamilton, that we copy them entire. They are entitled "Health Aphorisms":

1. Fresh water covering the ground is healthy, but ground lately covered with fresh water is unhealthy.

2. A *moist* cellar is more dangerous than a *wet* cellar.

3. A basement is never healthy. Moist and poisonous vapors floating along the surface of the ground are continually pouring into these receptacles.

4. A house whose windows are covered by vines, or shaded by trees or mountains, is not healthy, as it can be neither light nor dry.

5. One case of fever and ague originating in the soil establishes its insalubrity.

6. Drain the yard and keep the house dry.

7. In choosing a residence, inquire of some person who formerly lived in the neighborhood, but has sold out, in regard to the surroundings.

CHAPTER XVI.

DISEASE AND ITS TREATMENT, INCLUDING PREVENTIVE, HYGIENIC
AND MEDICINAL MEASURES.

Disease consists of an increased, decreased or perverted action of one or more organs of the body. It is not enough to know which of these three conditions is at the foundation of a sickness—we must know what is the cause at work to bring about that condition. There may be a fault in the nervous system, which interferes with the nerve control of the parts affected, or there may be some obstruction or irritant at work in those parts, which prevents their responding to the influence of the nerve force. Most of the diseases to which the human race are subject depend upon disordered excretions, unsuitable diet, and accidents. Nature sets up vomiting, as a rule, because the stomach contains something that will injure the body if it be not removed; diarrhœa often indicates a similar condition within the intestines; a profuse sweat following a fever is an effort to unload the blood of effete matter through the skin. A discharge of any kind is almost invariably composed of noxious material, with the single exception occurring in greatly debilitated persons, in whom the tissues are so relaxed that the natural fluids of the body ooze away without hindrance. Taking a hint from Nature, we give emetics to unload the stomach, cathartics to cleanse the intestinal canal, medicines to produce perspiration in order to remove wastes from the blood, expectorants to raise phlegm and other matters from the lungs, and diuretics to stimulate the kidneys, to increase the amount of urine separated from the blood. In other words, we seek to stimulate organs deficient in action, to soothe those already too active, and to change the action of those which are perverted.

Fevers.—Fevers, during the first stage, are so much alike that it is impossible to tell what form they will take. There is in the beginning weariness, a hot and dry skin, with rapid pulse and an increase of temperature. The natural heat, $98\frac{1}{2}^{\circ}$, may be raised during exercise, after a

heartly meal, or under the use of stimulants, a degree or a little more, without being a sign of fever; but, with the symptoms above given, a rise of temperature means the beginning of fever: the higher it rises, as a rule, the severer the illness, but this is not always true.

Most fevers run a definite course, and end at a given time, unless shortened by treatment. They may, for convenience of description, be divided into three classes:

1. *Continued fevers*, which include simple fever, influenza or catarrhal fever and typhoid, etc.

2. *Periodical fevers*, such as intermittents, remittents, congestive fever, etc.

3. *Eruptive fevers*, embracing scarlet fever, measles, small-pox, chicken-pox and erysipelas.

In all fevers there are four stages: the first covers the period during which the fever is coming on, called the stage of *incubation*; the second, the *cold*; the third, the *hot*; and fourth, the *sweating stage*. To prevent a fever, or to cut it short, is possible only during the forming, or *incubation* stage. At that time there is a feeling of distress, a sense of approaching sickness, more or less headache, frequently backache, with pain in the limbs, scanty urine and constipation. An active dose of medicine to open the bowels, increase the urine and produce moisture of the skin, taken at this time, will frequently put an end to all signs of disease. Any medicine that will accomplish the purpose will answer; but we have found that nothing excels the following treatment in preventing fever of all kinds: Take a laxative dose of Eilert's Daylight Liver Pills at bed-time, and also when convenient soak the feet in hot water for half an hour, at the same time taking a bath. Add a heaping teaspoonful of bi-carbonate of soda to each pint of water, using any good, clean, hard soap; after bathing the skin thoroughly, rub it dry with a coarse towel, so as to cause a warm glow, and bring the blood to the surface. It is better to do this at bed-time, so that on retiring immediately with something hot at the feet sweating may begin. When successful in getting the skin moist and the pills operate freely, the fever poison will be so nearly removed that Nature can do the rest, and the fever will be cut short. When fevers are prevailing in a region, the Happy Home Blood Purifier is an excellent preventive. It keeps the blood pure by gently exciting the excretory organs to remove all wastes, thus relieving it of the material which furnishes a germinating place for the seeds of disease.

A Simple Continued Fever is one that begins with a chill, followed by a fever with a hot skin, quick pulse and red face; this fever continues to rise until the skin begins to sweat, the urine increases in quantity or the bowels move freely; then it gradually dies away in cases that recover. Such a fever may last a day, or be prolonged for weeks. The simple fever of this kind is most frequently seen in children, being caused by a cold or by some improper food, which irritates the stomach and intestines. It is not uncommon to see children apparently dangerously sick and delirious, and in a few hours as well as ever. If there be reason to think a child has fermenting or undigestible food in the stomach, it is an excellent plan to produce vomiting as soon as possible. A good emetic for a child is made by steeping a heaping tea-spoonful of powdered ipecac in six ounces of chamomile tea; sweeten and give in teaspoonful doses every 15 minutes until vomiting occurs. This treatment will also prevent convulsions caused by an overloaded stomach, or obstructed bowels.

A Cold, or Catarrhal Fever.—This disorder results from a sudden or unequal cooling of the body, which affects the nervous system in a peculiar way. The nerves which control the pores are ordered “to close the doors;” they obey, and the mouths of the pores are drawn up to prevent the escape of the perspiration. As shown in the chapter upon the excretions, other organs come to the rescue. A *cold in the head* is marked by sneezing and a discharge from the nostrils. A *cold in the throat* is shown by hoarseness and sore glands, with more or less swelling in and around the throat; a *cold in the chest*, by cough and difficult breathing; a *cold in the kidneys, liver, stomach or abdomen*, by neuralgic pain and soreness on pressure over those organs, with indigestion, and later diarrhoea or constipation.

Treatment.—Measures for relief must be taken within five or six hours to succeed in “breaking up a cold.” Neglected, it runs a definite course from a week to ten days, and terminates in recovery, or in chronic catarrh, pneumonia, pleurisy or consumption, according to the constitution of the patient and the state of the system at the time. There should be an attempt to restore perspiration, and heat is usually the most convenient agent for the purpose. There are various ways of applying heat—one of the most effectual being the vapor bath, which may be given in any house.

The Vapor Bath.—Take a common chair with wooden bottom;

place it out of the way of draughts, and let the patient, after removing all clothing, be seated in this chair, with a large woolen blanket drawn close about the neck, inclosing patient and chair, as if it were a tent; pour two or three table-spoonfuls of alcohol (about half a tea-cupful) in a saucer, set in an empty tin basin; place this under the chair; draw the blanket away from it, and light the alcohol with a match, immediately closing all apertures to retain the heat. Should the patient feel faint from the sudden heat, moisten the forehead and face with cold water, which ought always to be placed near to provide against faintness. The action of the bath is assisted by giving at the same time hot lemonade, hot ginger or spearmint tea—or, if these are objected to, simple hot water; whatever is taken should be in large quantity to supply water to the blood as fast as it is parted with, when perspiration begins, and in this way “wash out” the disease-producing matter. The patient should remain exposed to the heat for not less than twenty minutes; if the alcohol does not last so long, it may be replenished in this way: *CAUTION.—Draw the saucer out from beneath the blanket, and away from the patient before refilling;* pour in the alcohol, and replace in the basin under the chair before lighting. The basin is for safety in case the saucer should break from the heat. Wrap the patient in the hot blanket, and cover snugly in bed, placing a hot brick to the feet. At the end of an hour remove the covers, one by one, at intervals of fifteen minutes, to cool off the patient; and when sweating ceases and the skin feels dry, let him put on his under-clothing and retire as usual, taking care to have the bed warm. In the morning bathe the skin with tepid water, containing a tea-spoonful or two of aqua ammonia, and give it a thorough rubbing. This is to make it less sensitive to cold. Without some such precaution a patient takes cold more easily after a bath than before. Those who object to the use of alcohol may substitute for it a pan of hot water, and throw into it a hot brick or flat iron, taking care to protect the patient's limbs from the hot water thrown out as the hot brick is thrown in. This is a valuable remedy in all chilly conditions, except when a patient is falling sick with small-pox. There are many people without homes or any one to assist them in this treatment; the best they can do at the beginning of a cold is to heat the feet well at bed-time, and take a three-grain Dover's powder; this is useless after 24 hours. Immediately upon feeling an irritation of the throat, after a cold is taken, begin the use of Eilert's Extract of Tar and Wild Cherry.

This, in most cases, will cure a cold without any other medicine, provided some means of restoring lost heat is resorted to. The later effects of a cold will be treated of under the respective diseases produced by it. Should the bowels be inactive, a cathartic dose of Eilert's Daylight Liver Pills will be useful in preventing congestions.

Influenza.—This appears periodically as a wide-spread epidemic, extending over large portions of the earth at the same time. It is believed to be due to some peculiar atmospheric disturbance. The symptoms are a sense of tension in the forehead, watery eyes, sneezing, cough and oppression of the chest; so far they appear like an ordinary cold, but the chief characteristic is extreme physical prostration. There is also mental depression, desire for quiet and rest, and inability for exertion.

Treatment.—Employ the measures recommended for a cold. Apply Uncle Sam's Nerve and Bone Liniment to the chest, and keep as quiet as possible. This disease is dangerous when it attacks the aged and those of feeble constitution. When irritation of the nasal and air passages is extreme, inhale the vapor of camphor water for a few minutes every two or three hours.

Typhoid Fever is a disease of slow and insidious approach. For days, and sometimes weeks, the patient is ailing. There is a sense of weakness and fatigue, loss of appetite, soreness of the muscles, dull headache, disturbed sleep, poor appetite and low spirits. All of these symptoms are witnessed in other fevers; therefore, it is seldom possible to tell whether typhoid or other disease is impending until later. The patient becomes chilly, and, following this is fever, often accompanied with great thirst; after a time the bowels become bloated and tender to the touch; the tongue is coated, usually with red edges and a dark streak through the center. The teeth are soon covered with dried mucus, and the mind becomes dull and wandering. About the sixth to the eighth day (never earlier than the fifth) of the fever, the peculiar eruption appears on the chest, or between the nipples and the navel. It consists of scattered red spots, which at first resemble flea-bites, but later become larger, and sometimes very dark colored; generally they are rose-colored. They give no feeling of hardness to the finger as it is passed over them, and the redness fades away under pressure. This eruption is not invariably present in typhoid fever, and neither its presence nor its absence seems to have anything to do with the severity

of the fever. During the later stages diarrhœa is often very troublesome, and it is not uncommon for a profuse hæmorrhage from the bowels to occur. The disease lasts from three weeks to three months. A rule that has many exceptions is, that, when this fever lasts longer than seven days, it will continue fourteen; if it does not at that time begin to lessen, it will continue another seven days before convalescence begins. It is a fact that the morbid element in the blood which gives rise to the disease requires about seven days for the completion of its development; and whether, at the end of that time, there is a new crop of germs ready to renew or maintain the disturbance of the system during their life-time, or whether this periodic character of the disease is owing to some other cause, we are not prepared to say. Hæmorrhage from the nose is frequently an early and troublesome complication. It may be checked by placing ice on the nape of the neck. Wrap the ice in a cloth, and protect the clothing from becoming wet as it melts; for the dampness thus produced is not only unpleasant, but positively injurious. It is believed that typhoid fever originates in drinking water that is contaminated by the discharges from a patient suffering from the disease. Milk from dairies where there are typhoid fever patients on the premises has been known to infect the families to whom it was distributed.

In one instance where an epidemic of this fever was thoroughly investigated, it was traced to a milk-man, as only the families supplied by him were infected. It was found that one of the family had been a long time ill with typhoid fever, and that the utensils from the sick-room were emptied upon the bank of a small creek, which, a little lower down, supplied water to the barn-yard. It was explained that the milk-cans were sometimes rinsed at the pump in this yard, from whence came the contamination. It was possible that the milk had been watered from the same source, yet it could not be proven; but the fact remained that many of those who partook of the milk, unboiled, suffered from typhoid fever, and others did not. It is noticeable that in communities where drouth prevails, and water of any kind is difficult to obtain, compelling the use of that which would ordinarily be rejected, typhoid fever is very liable to appear. This disease is regarded as one of the "filth diseases"—therefore, it should not occur at all; if there were proper inspection by health officers wherever a case is known to exist, a second case could not follow.

Treatment.—All garments worn by the patient, as well as the

sheets and pillow cases, ought to be placed in a disinfecting solution (see Appendix). The discharges from the patient should also be disinfected before they are carried out of the room, and cloths used as handkerchiefs ought to be burned. The dry, hot skin is cooled by a bath containing vinegar sufficient to make it taste sour: the water may be tepid or cool, and the bath may be repeated every six hours to advantage when the fever is high. At least twice in the 24 hours the bath ought to contain a small amount of carbolic acid to disinfect the patient. Frequent bathing of face, hands and wrists is very comforting. Small pieces of ice relieve the thirst, and are less likely to disagree with the stomach than water. When there is a desire for acid drinks, lemonade, cider, or the phosphates may be given freely. Pure glycerine painted over the lips and tongue soften and moisten them when hard and dry. The diet must be such as will sustain the strength. Milk and lime-water, when it can be taken, is the best form of food; it should be given in small quantity, as often as every three hours. It should not be kept in the sick-room, but in a cool place away from anything that can impart to it an unpleasant taste or smell. Iced buttermilk is sometimes preferred to milk, and is equally as nourishing in these cases. Patients who will not take milk must be given beef extract or soups. There is danger in solid food, because the intestines in the vicinity of the right groin, where the disease is seated, are ulcerated, and any irritation at that point may excite hæmorrhage.

The medicines of benefit in typhoid fever are few. It is a good plan to give a cathartic dose of Eilert's Daylight Liver Pills, at the beginning, when the first symptoms of ill-health are observed, provided the bowels are constipated. No cathartic should be given except as prescribed by a physician, after the disease is fully developed. Physic then endangers life, unless carefully guarded by other medicines, such as a physician will advise. An emetic to remove imperfectly digested material from the stomach was formerly a very popular part of treatment; undoubtedly, the thorough emptying of the entire intestinal canal is an excellent preparation for medicines, and is especially called for when the tongue is heavily coated and the breath is foul. Internally, the best remedy in the earlier stage is prepared by mixing one tea-spoonful of a five per cent. solution of carbolic acid (redistilled) in half a glass of water, and adding one tea-spoonful essence of winter-green.

The dose of the mixture is one tea-spoonful every hour the first day, unless it appears to irritate the stomach, when it should be diluted with more water, and given once in two hours. As soon as the tongue begins to clean and appears moist, quinine, in two or three grain doses, may be given every three hours; should the head begin to ache more severely after the quinine has been given for several hours, increase the intervals between doses to six hours, if necessary. Tenderness of the bowels may be treated at first by laying upon the skin a hot flannel cloth, moistened with Uncle Sam's Nerve and Bone Liniment. A dry and dark-colored tongue, dry and burning skin, distended abdomen, tender on pressure, indicate ulceration of the bowels. In this condition turpentine, in ten-drop doses, rubbed up with a little sugar, may be given internally once an hour, until the symptoms begin to improve—after which the time between doses should be increased. Turpentine may at the same time be added to the liniment used on the abdomen. Occasionally, gas accumulates in the intestines to an extent which threatens to prevent the entrance of air into the lungs, because the stomach, liver, and diaphragm are crowded upward into the cavity of the chest. An injection should be quickly prepared, as follows: Mix one tea-spoonful of spirits of turpentine with the yolk of an egg; thin the mixture with sweet milk until it will pass through a syringe; then inject it into the bowels, and keep it there for several minutes. A tea-spoonful of chloroform, in a table-spoonful of gum-arabic water or flax-seed tea, may be given by mouth. Turpentine injection is the best method of checking the hæmorrhage from the bowels; and, in case it occurs, the patient must be kept very quiet in bed, and a physician be summoned. No patient, with severe typhoid fever, should be treated without a physician in attendance, where it is possible to procure one. Good nursing, perfect cleanliness, ventilation, liquid diet and the simple measures we have recommended, will give a patient a better chance of recovery than the best of medical advice, without these essentials.

The period of convalescence has arrived when the fever grows milder, the tongue and skin moist, the delirium disappears, and the feeling of hunger is experienced. This is a critical time, and many a person has been successfully carried through a long and tedious attack of typhoid fever to be destroyed at last by a relapse brought on by unsuitable food. During the height of the fever there is little danger from the food, because the patient can be persuaded to take only a small quantity; as recovery begins, however, the exhausted tissues all cry out

at once for supplies, the stomach is weak, a portion of the intestines is ulcerated, and digestion goes on very slowly. Nature must be coaxed to carry on her work at all, and when over-burdened gives up entirely. Continue the milk or liquid diet till the bowels are no longer tender on pressure, and return to solid food very slowly. Toast may be given first—a small piece only at once. Should this do no harm, more may be given next time, and little by little other articles may be added—such as fresh beef, scraped, made into balls and lightly broiled, a baked apple, the skin and core being rejected; and after sufficient time has elapsed to show that these are digested, a baked potato, the skin being removed, may be given, and so on day by day—adding something more to the list, from which the patient may select what he prefers. A small quantity, only the exact amount he may eat, should be set before him, until the ravenous hunger has given way to a moderate appetite. The meals may be repeated every three or four hours; but do not trust the convalescent from an acute disease to judge how much he ought to eat. Happy Home Blood Purifier and Health Tonic may be given after the tenderness of the bowels disappears, in order to restore their regular action and improve the strength. This remedy, taken when the disease prevails, is an excellent preventive. All water should be boiled before it is drank, until the source from which it comes is proven to be free from contamination.

Intermittent Fever (Fever and Ague).—This fever is more prevalent in low, swampy situations, and where the drainage is poor. Drinking water containing decaying vegetable or animal matter, is occasionally productive of "chill fever." The disease occurs in regular periods, with an interval of health between them. From the beginning of one of these to the commencement of the next is termed a *revolution*, and comprises a *forming*, *cold*, *hot* and *sweating* stage, with the *intermission*. There are three principal forms of ague: the *quotidian*, where the disease makes a complete revolution in twenty-four hours, the fever recurring every day; the *tertian*, where the revolution extends through forty-eight hours, the fever recurring every other day; the *quartan*, where a revolution takes seventy-two hours. Some days previous to the cold stage the patient feels ill, there is loss of appetite (rarely a ravenous appetite), torpor of the excretory organs, and indisposition to take exercise; a desire to yawn and stretch comes on, and soon afterward chilly sensations are felt along the back, the head aches, and there is great thirst; the lips and finger-nails turn purple,

the face grows pale and pinched, the pulse feeble, the muscles quiver, the teeth chatter, and the patient seeks in vain to warm himself at the fire or in the sun. The chill lasts from a few minutes to several hours, and is followed by fever. When the chill has been long and severe, the fever is comparatively slight, but when it has lasted a short time only, the fever is long and severe. During the fever the skin and mouth are parched and dry, the urine is scanty, and the bowels constipated. It is not uncommon, in ague regions, to see the patient delirious during this stage, which may last from one to twenty hours. As the sweating stage arrives the skin becomes moist, the pulse natural, and during the profuse perspiration the heat disappears, and the patient appears to be completely restored.

Treatment.—Very little can be done for it, except in the intermission. As soon as this arrives give Eilert's Daylight Liver Pills in cathartic doses, and as soon as they operate give quinine, in three to five grain doses, every three hours until the forming stage again begins. *Do not give quinine except in the interval;* it is not only useless, but harmful given during either stage of the disease. Large doses are unnecessary, and sometimes produce a bad effect. During the chill and fever the stomach will absorb nothing, and is only irritated by medicines. For the thirst, give cold or hot water, as the patient prefers. Tincture of iron is almost always needed for a time; it should be given in five to ten drop doses, in alternation with the quinine during the intermission. On the first appearance of the forming stage, Happy Home Blood Purifier, given every two hours for 12 to 24 hours, will generally prevent the development of the disease; and when begun too late for this, give it for a month or two after the "chills are broken," to protect the system from another attack. Hygienic measures must not be neglected.

Malaria.—This name is now applied to certain disorders which were formerly called "bilious." There are fashions in medical terms as well as in dress, and it is now considered the proper thing to have "malaria" rather than "biliousness." The term malaria was originally used as the name of the germ, the gas, emanation or what ever it may be, which excites in those exposed to it a periodical sickness, such as ague, remittent fever, congestive chills, etc. The disorder to which the name is now popularly applied resembles ague, except that there is no distinct chill and fever. It has the same dullness of mind, indigestion, languor, yawning, stretching, foul breath and other evidences

of impure blood. The disorder is sometimes called “dumb ague,” and is caused by retained excretions, by breathing the air of unventilated sleeping-rooms, or that which is contaminated by sewer-gas, and by a neglect of other hygienic laws.

Treatment.—The remedy is plain—remove the conditions detrimental to health, and take for a medicine one that unloads the system, stimulates the action of the nerves, and sets the internal machinery running with renewed vigor. Happy Home Blood Purifier is such a remedy, and would save every family expensive sickness, were it kept in the house and administered as needed.

Congestive Intermittent (Congestive Chill).—This is a species of intermittent fever, which is attended with great danger to life. It is thought that not more than one in a hundred will recover, without prompt treatment at the start, and some will die in spite of everything that can be done. Time is of the utmost value, but skill is also needed; therefore, send for a doctor at once, and while waiting for him carry out the measures here recommended. The cold stage begins as in ordinary ague, but in an hour or two the great prostration of strength and stupidity of mind evinced by the patient will show the most inexperienced that it is not an ordinary chill; the pulse will be very slow, the skin livid and covered with a cold, clammy perspiration. As the disease advances, the patient becomes unconscious; he lies on his back and slips down toward the foot of the bed; breathing is difficult, and all the symptoms point to a speedy death. The most energetic measures must be tried, and no time must be lost waiting upon medicines to act. The first thing to be done is to restore heat to the surface. Bathe the skin with hot water, containing mustard or cayenne pepper, and rub it briskly. When the attack is very severe, add mustard or cayenne pepper to a kettle of water; let it heat until the water has extracted the strength; wet a blanket with it, wring out and wrap up the patient in it, having first removed the clothing to allow the moist blanket to be in direct contact with the skin; then place bottles of hot water, hot bricks, or irons, or anything that will retain the heat, about the patient—but *do not scald him*. Should there be nausea, with a feeling of weight at the stomach, give an emetic; ipecac or thoroughwort (boneset), with a little mustard or cayenne pepper, answers a very good purpose. After the stomach is cleared out, give a stimulant. Aromatic spirits of ammonia given in twenty-drop doses, well diluted with water, every fifteen minutes, weak pepper tea, or hot

ginger tea are among the best that can be selected for this disease. Continue the stimulation until it begins to take effect, and then begin giving quinine. The measures before described are of the utmost importance; but they are merely preparatory for the only medicine that is known to have any power to control the disease. Quinine, in ten-grain doses, should be given within an hour of the commencement of the chill, and repeated every hour until the patient rallies. The dose should be larger when the weakness and torpor is extreme; in the worst cases one drachm has been given every hour until the chill disappeared. It is useless to give quinine without the internal stimulant, for it will not be absorbed. To prevent a recurrence of the disease, after the crisis has passed by, give twenty grains of quinine every six hours, and Happy Home Blood Purifier every four hours, arranging the doses so that they need not be given at the same hour. Ordinary doses of quinine will fail in this dangerous form of intermittent. Tincture of iron is called for when the tongue appears of a deep red or purplish red color during the intermission.

Remittent Fever (Bilious Fever).—This differs from intermittent fever in having but one perfect revolution—the hot stage being greatly prolonged, and varying in intensity at different hours of the day. The *forming stage* usually lasts several days, and the symptoms are similar to those of the same stage of intermittent.

The *cold stage* lasts from one to two hours, rarely being protracted beyond this time, and is followed by the *hot stage*; thus far it is difficult to tell whether the fever will prove to be intermittent or remittent. The hot stage lasts from eight to twenty hours, when the heat grows less; there is some sweating about the neck and head, pain in the back and head, which has been severe in the preceding stage, grows less, and all the symptoms improve. This remission usually occurs in the morning, but in some cases there are two and three remissions in the twenty-four hours. The length of the remission varies in different cases—it may last but an hour or two, or for several hours, forming almost a complete intermission; however, the patient does not appear to fully recover his health during this period as he does in intermittent fever. It is followed by renewal of the fever without a chill, and continues on until it has run its course, the fever alternately becoming better and worse at regular intervals. The strength fails, and it is not uncommon for the fever to run into a typhoid condition. When not arrested the first week, it ordinarily assumes the form of a continued fever.

As it sometimes proves fatal, a physician should be summoned early in the attack, that he may be able to guard the patient against the complications which increase the danger.

Treatment.—In the forming stage give Eilert's Daylight Liver Pills, to secure a thorough evacuation of the bowels. When possible to do so, free perspiration should be produced by the vapor bath, or in any other way that may be convenient. An alkaline bath should be taken, to dissolve and wash away the gummy excretions on the skin; when the stomach contains fermenting material, and the tongue is heavily coated, an emetic is one of the most efficient measures that can be employed. After the skin becomes moist and the tongue begins to clean, give quinine in two or three grain doses, every hour, until the fever begins to rise; then discontinue it until the next remission occurs. *Never give quinine when the skin is dry and the tongue is heavily coated*, and you will avoid any injurious effect from its use. During the hot stage dilute hydrochloric acid, in doses of ten to twenty drops in two or more table-spoonfuls of water, may be given every hour; should it give rise to burning in the stomach, give a smaller dose, and mix it with more water. Lemonade may be given when desired. Treat the patient the same as recommended for typhoid fever when the symptoms are similar. During each remission give quinine; it frequently adds to its value to combine it with iron, prussiate of iron being a good preparation. Make a powder containing two or three grains of each for one dose. As the patient recovers, Happy Home Blood Purifier should be used to hasten complete recovery. During the entire course of the illness the patient must be carefully fed—there is almost always complete loss of appetite and often loathing of food; in these cases the liquid foods should be given with the same regularity as medicine, and in small quantity at a time. Some preparation of pepsin is often needed to aid the stomach, because the gastric juice, in common with all the other secretions, is lessened in quantity and perverted in quality. During the fever, when the tongue is coated and the breath is foul, combine carbolic acid with the diluted hydrochloric—giving one drop of the concentrated carbolic acid with ten drops of the dilute hydrochloric in half a glass of water, and guard the teeth from the acid.

Scarlet Fever (Scarlatina).—This is a disease of childhood, and few persons take it after the age of twenty. From six to eight days elapse after exposure before the disease makes its appearance, and

it usually begins with a chill, followed by a fever having the symptoms common to all fevers. There is sore throat, and some pain on attempting to swallow; in the course of six to twenty-four hours a scarlet rash appears upon the face, which spreads over the whole body. In color it resembles the redness produced by mustard, and is made up of innumerable small red points surrounded by a rose-colored base. The fever continues about as before, from twenty to forty-eight hours after the rash comes out. It then abates, and in from three to five days the redness disappears, and is followed by the loss of the scarf-skin, which peels off in branny scales. We have described the mildest form of the disease. In the severer forms the symptoms are similar, but much more intense. The sequel of scarlet fever is to be feared quite as much as the disease itself, and may be as serious after a mild case as a dangerous one; therefore, a physician should be sent for as soon as the nature of the case is discovered.

Treatment.—It is impossible to break up or to cut short this disease after it has begun to affect a patient. Give water to drink freely; cold water will do no harm. When the throat is inflamed, a piece of slippery elm bark added to the water will be agreeable. Lemonade is sometimes relished, and may be given alone or with flaxseed, to make it more soothing to the throat. Bathe the skin with tepid water, and anoint it two or more times during the twenty-four hours with carbolized suet. Some physicians recommend a bacon rind, and prefer it to any ointment. It quiets restlessness and helps the patient to sleep. Mild cases need very little medicine. At the first indication of sickness, let the bowels be moved by a dose of Eilert's Daylight Liver Pills or castor oil. If the rash comes out freely the case needs nothing except watching to prevent a chill, and to keep the patient from eating something unfit for the stomach. If the rash comes out slowly or imperfectly, this powder will be useful.

Mix one grain of quinine with half a grain of powdered cayenne pepper. Give this for one dose mixed in molasses, or syrup. This may be repeated every three hours for a child two years old. Do not give any more after the rash is out, unless it disappears too soon, when the same medicine may be given to bring it out again. In case the throat is very sore, with canker-spots in it, let your druggist prepare this prescription: One-half fluid drachm tincture of iron; chlorate potash, twenty grains; simple syrup, or honey, four fluid ounces. Mix and give one tea-spoonful every three hours, alternating with the quinine

powder advised above. The restlessness, when extreme, may be quieted by Dr. Winchell's Teething Syrup.

Prevention.—The only certain method of preventing an attack of scarlet fever at present known is to avoid exposure. When one child is attacked by it, other children should be kept away from the sick one. If possible send them away from home for a month or more; unfortunately, many families can not do this, and then it becomes necessary to take other measures. If there be a spare room, remove carpet, curtains, all stuffed furniture, and all clothing from the closet, also the feather bed. Use a straw or husk bed for contagious diseases; and, after the patient needs it no more, burn the straw or husks, and boil the tick as well as all quilts, comfortables, blankets, and clothing in the room. Let the nurse keep apart from the rest of the family, and take care to free herself from infection before going where there are other children, by changing all her clothes, and washing her face and hands in water containing a disinfectant. The child should remain in the spare room until the disease is cured, and the skin has ceased to peel; for the fine, bran-like scales shed after scarlet fever will infect others. The discharges from the nose and mouth should be collected on old cloths or soft paper and burned; never save cloths used for this purpose to be washed. The vessel should contain a disinfecting fluid, so as to destroy at once any germs in the urine, or passages from the bowels; but it will not do to trust to this for safety. The vessel should be cleaned out immediately after it is used, washed with water and rinsed; then more of the disinfectant should be poured into it. Never wash it out near a well. We have given directions for disinfectants in the Appendix, which any one may prepare at a small expense.

The bedding, sheets and clothing of the child worn during the sickness should not be removed from the room until they are thoroughly saturated with some disinfectant solution, after which they may then be taken away and washed; the boiling will destroy any poison still left in them. Never be so cruel as to send the clothing from any kind of an infectious sickness to a laundress without telling her of the fact, so that she may guard her own children from it. Many a poor, hard-working woman has been put to great expense and trouble by the inhuman neglect of this precaution on the part of selfish patrons.

As soon as the skin has ceased peeling, bathe the child all over, including the hair; anoint the skin with carbolized ointment, dress in

clean clothes, after which it may mingle with the family. The room should be cleansed as described in another chapter.

What May be Done when there is no Spare Room.—Unfortunately, there are many families who have neither a spare room nor friends to whom the well children may be sent. The mother, too, must be nurse for the sick, and at the same time care for the rest of the family. It is possible, even then, to save the other children from the disease—sometimes, at least—by taking the following precautions: If the whole family sleep in one room, all beds and bedding, except the one on which the patient lies, must be taken out into the open air; it is better to keep them out-doors all the time that the sun is shining. The following description of the way such a case was managed illustrates so well what may be done under unfavorable circumstances that it is introduced here in full: In a large family who occupied two rooms—one for sleeping, the other for a kitchen and sitting-room—a child was found just beginning to show the scarlet-fever eruption. It was in winter, therefore impossible to keep the other children in the open air, or the sick one in the room without a fire. One corner of the common living-room was cleared out, and the child's bed placed there. Blankets were tacked up to divide that corner from the rest of the room, and all the family except the father and mother were instructed to keep as far as possible from the patient. A little space was left within the inclosure, to pass around the bed, and one window opened into it. A saucer containing chloride of lime was set on the floor in one corner, on which a little vinegar was poured twice a day. Fresh lime was placed in the saucer every morning. The patient was first given an antiseptic bath, and then anointed from head to foot, four times a day, with carbolized fresh lard. Pieces of newspaper were used to spit on and for wiping the nose, which were burned as soon as used. During the night, as well as the day, all passages from the bladder or bowels were received in a vessel containing a disinfectant solution. This was covered and carried out immediately, the utensil thoroughly cleansed and disinfected. When the child's clothing needed changing, it was taken off, and thrown into a pail containing disinfectant solution before being carried from behind the blanket. The mother had a loose wrapper which she put on over her clothes before waiting upon the sick one, while bathing it, or whenever she had to do anything at the bedside. This was removed and her hands washed before going among the family. All spoons, tea-cups, glasses, etc., used by the sick child

were placed in a basin of carbolized water, and all remnants of food and milk were burned. The other children were given three times daily a dose of Happy Home Blood Purifier as a prophylactic, the dose being diminished when it increased the action of the bowels too much. This was kept up for three weeks. The child was severely ill, but at the end of that time the skin was entirely sound; he was bathed in carbolized water, clad in fresh garments, and permitted to mingle with the other children. The bed and blankets were taken out and exposed to the cold until they could be washed. The straw in the tick was burned; the feather pillows soaked for several hours in a disinfectant solution, and afterward dried in the open air. This seems to be a very troublesome method, but it had the merit of proving successful, for no more of the family were attacked by scarlet fever on that occasion.

General Care of the Patient.—During the early part of the fever, keep the room cool, but uniform from 68° to 70°. As the eruption disappears the room should be warmer—from 70° to 75°—because a chill at this time is extremely dangerous. It may produce congestion of kidneys and dropsy, or pneumonia, or gatherings in the head, which destroy the hearing, or any one of those dangerous after-results which are to be feared when a child is attacked with scarlet fever.

The diet should be plain and nourishing, and, if the throat be very sore, almost wholly liquid. Summon fortitude to resist the pleading for candies, nuts, cakes and dainties which are so hard to refuse to the survivor of a dangerous sickness, or you may have cause to mourn for a life sacrificed to your lack of firmness. Milk, toast, broth, soup, broiled scraped beef-steak, baked apples, with skin and core removed, should form the larger part of the diet at this time. The room must be well ventilated, for the protection of the healthy as well as for the benefit of the sick. Rooms kept closed and heated become hot-beds of infection. Do not heap clothing upon the sufferer, if hot and feverish; throw over him only a sheet or thin blanket. Some people insist upon applying hot poultices and covering with several heavy blankets when a child is coming down with measles or scarlet fever, with the idea of bringing out the rash. This plan will invariably make it worse. It is wrong to send children to school until at least six weeks have elapsed after the rash began to disappear and all scales have fallen. It is unsafe even then, if the throat is sore or there is a discharge from the ears. Besides bathing the skin, the hair must be

thoroughly washed with soap and water and rinsed with disinfectant, for it retains the poison longer than the skin. The germs of scarlet fever may be carried through the mail. A little girl was very sick with it; her mother, sitting at the bedside, was engaged in writing a letter to her sister. Having asked the child what message she wished to send to her little cousin, she begged to send a kiss. The letter was held to her lips for a kiss and duly sent; on its receipt the cousin kissed it, and ten days later was attacked by scarlet fever, from which she died.

Measles.—The time which elapses between exposure to measles and the first symptoms of the disease varies from seven to fourteen days, and has been known to be nearly three weeks. The patient appears at first to have taken a cold in the head; there is sneezing, stuffing up of the nose, red and watery eyes, hoarseness and a troublesome, dry cough. Within a few hours there is a chill, followed by a fever, attended with a flushed, hot skin and considerable irritability. The fever increases from two to four days after the chill, when the eruption begins to appear. It resembles mosquito bites, arranged in patches of horse-shoe shape, which feel rough after the finger is passed over them, and are of a darker color than the scarlet-fever eruption. They are seen first on the face, from whence they spread over the neck, chest and whole body. The fever grows less as the eruption is developed. It requires from 24 to 48 hours for measles to fully come out; the same degree of redness continues one or two days, then slowly declines and passes away between the sixth and ninth day after the chill. While the eruption lasts, the bronchial irritation and cough are worse, and frequently there is difficulty in breathing.

Treatment.—The patient needs to be kept warm while the eruption is present; but the irritation and heat of the surface may be relieved by the warm bath, followed by anointing of the skin with oil, vaseline, or fresh suet. The intestinal canal should be cleansed by a mild cathartic. Castor oil is excellent in this disease. Eilert's Extract of Tar and Wild Cherry relieves the bronchial irritation and cough. In case the skin becomes of a dusky color and the eruption does not "come out," an emetic of ipecac is very successful in hastening its appearance. The eruption may develop nicely and suddenly disappear, giving rise to fever, stupor and other alarming symptoms. For this condition give quinine and powdered cayenne pepper, equal parts in capsules, or wafers, in doses suited to the age. For example, a child two years old may have one grain of each, repeated every two hours,

until the eruption begins to return, and then once in four hours, until it is complete. Malignant measles needs a physician from the start. Carbolyzed baths and the solution of carbolic acid recommended for internal use in small-pox may be given while waiting for the doctor. Convalescents must be cautious in using their eyes, which are weak, for some time after recovery, as over-use at this time will permanently injure them. Complications may be averted by avoidance of colds, moderation in diet, and by the use of Happy Home Blood Purifier until every vestige of the disease has disappeared.

Measles, ordinarily, is regarded as a very simple disease, which needs no treatment except herb teas. It is true, that, like all the eruptive disorders, it has a definite course to pursue which can not be shortened by treatment; but it has one feature that deserves mention. A constitution that has any natural defect is almost certain to show it when attacked by measles, which seems to have a wonderful power of detecting weak points. While a comparatively harmless disease among children, except when it comes as an epidemic in its severe form, among adults it is to be greatly dreaded. Those who have weak lungs are liable to suffer most, and should avoid exposure when possible to do so.

Rötheln (German Measles).—The eruption in this disease resembles both measles and scarlet fever. It is frequently mistaken for one or the other of these diseases, and even for small-pox. The eruption is in small red dots, like scarlet fever, arranged in patches somewhat like measles, and by some authorities is regarded as a mixture of the two, but it does not guard the patient from an attack of either. It fades in about four days, and the scarf-skin is shed in fine, branny scales similar to dandruff.

Treatment.—This is not a dangerous complaint, and needs no other treatment than protection from chills, and attention to the hygiene of the patient. The medicines recommended for the disease which it most nearly resembles in a given case will be suitable for rötheln.

Small-Pox.—The alarm excited by a case of small-pox in a community is out of all proportion to its danger or inconvenience. It is a highly contagious disorder; therefore, every precaution ought to be taken to prevent its spread. It has been demonstrated, time and again, that it can be completely controlled by disinfection and isolation; hence, there is no good reason for a panic of fear at its approach. It

is not one-half as dangerous as scarlet fever, nor does it destroy half as many as diphtheria. This was not formerly the case. Only about 100 years ago, it was so fatal that 184 out of every 1,000 deaths were caused by small-pox, and of those who survived many were blind, deaf, crippled, or afflicted with scrofula in consequence of the dreadful ravages of the disease. Vaccination has changed the record wonderfully. In countries where it is compulsory only 2 deaths per 1,000 are due to small-pox, and the mild form known as varioloid, which some of the vaccinated have, leaves behind it none of the deformities or ill-health that follow unmodified small-pox. For more than thirty years not one of the nurses or servants in the London Small-Pox Hospital has had this loathsome malady. They are revaccinated on entering service there, and this fully protects them.

Parents who neglect to have their children vaccinated do them a grievous wrong. Just how vaccine matter protects, we do not know—it seems to act similarly to yeast in dough. Every house-wife knows that a mixture once fermented with yeast can not again be affected by the addition of yeast, unless fresh material be also added. It has been discovered that yeast seizes upon certain parts of the mass, transforming it into alcohol and carbonic acid gas, and when this material is all used up there is nothing more for the yeast to work upon. There appears to be, originally, some element in the human body in which the small-pox germ can develop. When this is used up by one attack of small-pox no exposure is dangerous, because the germ can find no material to nourish it. Vaccine virus is a small-pox germ in a harmless form, which possesses the power of using up the material exactly as does the original disease, but not as completely; therefore, many persons after being vaccinated are subject to varioloid. Another difference is, that, while one attack of small-pox generally protects for a life-time, vaccination appears to lose its protecting power after a few years, and re-vaccination is necessary. It is always prudent, when exposed to an epidemic of small-pox, to be vaccinated again, when two or more years have elapsed since a successful inoculation. Owing to the fact that blood diseases have been conveyed with vaccine virus, and that it is utterly impossible to know when some forms of blood disease exist, it is better to employ only animal virus—that is, the scab or pus obtained from a healthy calf that has been vaccinated. There are at present “vaccine farms” in the vicinity of all our large cities, where a regular business is made of preparing material for the

market; therefore, it may be purchased of reliable druggists everywhere with a reasonable degree of certainty that it is what it purports to be. As it loses its power within a year, it is necessary that it be fresh, and not from old stock. For unprofessional vaccinators it is better to buy the ivory points, and proceed after this plan: Select a convenient spot on the left arm of the person to be vaccinated, scrape the skin with a dull blade or with a needle, or preferably use an ivory point for the purpose; the scarf-skin only needs removal. When minute red points appear and a watery fluid begins to ooze out, moisten the stained end of the ivory point in cold water, and wipe off the virus upon the scratched surface. Usually two places, a little distance apart, are prepared, one side of the ivory point being wiped off upon one, and the other side upon the second spot. A cut which bleeds is seldom inoculated, the blood having washed out the virus. Let the arm dry before lowering the sleeve, and throw the point already used into the fire. *Never vaccinate two persons, even in the same family, without cleaning the instrument after each operation.* At a time varying from three or four days to two weeks, the wound will begin to be inflamed and swell, and within a week a pearly scab forms, dries up and falls off, leaving a puckered white scar. This is called a typical scar, and we have described the natural course for the vaccine virus to work. If the scab be removed before it is ripe, the wound does not progress so favorably. There are many modifications of its course, arising from an unhealthy condition of the blood and constitutional peculiarities that are frequently attributed to impure vaccine matter. Vaccination has power to modify an attack of small-pox, even so late as after a patient begins to have symptoms of the disease. It will lessen the danger and shorten its duration.

Small-pox has been divided into two forms: the *discrete*, which is mild, the points of eruption being distinct and separate; and the *confluent*, in which the points are numerous and run together, making large patches of solid scabs in the later stage. The period between exposure and the appearance of the symptoms is sometimes from 7 to 16 days, though it averages about 12 days. There is at first a sensation of weariness, irregular appetite, and deficient excretion. A distinct chill occurs a day or two after, and the patient has soreness of muscles, severe pain in the back, heaviness in the head, and some nausea. The chill lasts from two to four hours, or longer, during which all the disagreeable symptoms are increased. As the chill passes off, the skin becomes hot,

the pulse rapid, the bowels constipated, the urine scanty and high-colored, with intense pain in the head and back. The fever preceding the discrete form is mild, and resembles a common continued fever; that preceding the confluent is much more severe, and on the second or third day delirium is apt to occur. It is impossible to determine, from any symptoms that may be present, whether the case will prove to be small-pox, or one of the ordinary fevers for at least 48 hours after the chill. When it is known that the patient has been exposed to the disease, we may be reasonably certain of its nature; but even then we can not be positive that it may not be the beginning of typhoid, typhus or spinal meningitis. The eruption first appears about two days after the chill, in the form of minute, red papulæ or pimples, at first in the throat, then on the face, wrists, chest and where the skin is thin and delicate, gradually extending over the entire surface, becoming complete about the end of the third or fourth day. The skin feels, when the fingers are pressed upon it, as if it contains small, hard lumps of the size of a pin-head; and at any time from 12 to 24 hours after the eruption comes out, a minute blister forms on the top of each pimple, which enlarges to form the small-pox pustule. In the mild form the pustules are in groups of three to five, and the fever diminishes when they are fully formed. In the severe form the pustules run into each other, and their appearance is not attended by any improvement in the fever. In both forms of the disease the vesicle or blister fills, as it increases, with a clear whey-colored fluid, and is bound down in the center, like a dimple. There are many cases of small-pox in which the best authorities are unable to distinguish it from other skin eruptions until this "dimpled vesicle" is formed. Doctors are often blamed without reason for failing to detect the true nature of the disease previous to this time; but experts, even, have been deceived, because small-pox, like all other diseases, varies in form, according to the constitutional peculiarities of the patient. The reader may think our description of disease too indefinite, because the words "about" and "or," etc., are so frequently employed. Those who have seen much sickness know that it is impossible to give a description that will fit all cases suffering from the same disorder. Only general symptoms are common to all cases; and it is one of the difficulties of medical practice to determine what the disease is, in order to prescribe correctly. From the fifth to the eighth day the pustule matures, the surface becomes rough and yellow, the cuticle gives way, letting the contents ooze out, which, drying,

forms the scabs. On the eighth day of the eruption, or the eleventh from the chill, secondary fever ensues. In mild cases this does not run long; but in the severe ones it lasts several days, and is accompanied by delirium. At this time there is danger from complications of brain, lungs or other parts, which prolong the disease and make it more dangerous. As the secondary fever begins to decline, in cases that recover, the excretions from skin and kidneys increase, the swelling goes down, and about the fourteenth day the scabs begin to fall off. They are not all removed for two or three weeks. Pitting follows only when there has been ulceration of the true skin; in all cases the spots left after the scabs fall gradually fade away.

This disease has a certain course to run, and can be shortened only by vaccinating in cases who have not previously been inoculated, and in these it runs a more tedious course than simple varioloid. The most important part of treatment is to *keep the skin cool, provide free ventilation, and see that the patient has nourishing liquid food.* Patients in tents in the open air progress more favorably than in the best of houses, simply because the poisonous vapors given off from their bodies are not shut up with them to re-infect them through their lungs. There is no danger whatever of taking cold until convalescence begins. Hot sweats taken at the beginning make the eruption worse, and increase the pitting of the face.

Treatment.—Whenever any group of symptoms, like those which usher in small-pox, are observed, it is always good practice to give a cathartic dose of Eilert's Daylight Liver Pills and an alkaline bath, at the same time dressing the patient in clean garments. Beside these, very little can be done for the backache and other distressing pains which precede the appearance of the eruption. Do not be persuaded to give hot teas of any kind to bring it out. When the disease is known to be small-pox, it is a good plan to let the patient drink freely of a cold tea made by steeping a drachm of crushed black cohosh root in one pint of hot water for half an hour. Another medicine which has a powerful effect in preventing blood poisoning is carbolic acid. It may be given in cold spearmint tea when the taste is objected to. One fluid drachm of the concentrated acid may be dissolved in one pint of spearmint tea and given in table-spoonful doses every hour in bad cases, and every two hours in mild ones. The mixture should be shaken each time, before measuring out the dose. The skin may be bathed frequently with tepid carbolized water; it allays the heat, and

gives considerable comfort. After each bath, anoint with a very little carbolated cosmoline, to keep the skin soft. All discharges from the patient should be disinfected and destroyed. Sponges or cloths employed in bathing the skin after matter begins to escape from the pustules should be burned after once using. Iodoform, dusted over the surface after bath, destroys the foul smell, and lessens, when it does not entirely prevent, pitting. At the time the pustules are filling, and while the scabs are forming, nourishment must be given with unflinching regularity. Milk, soups, broths, raw eggs beaten up and given in milk, are the main articles of diet. None of these should be kept in the patient's room, as they absorb the poison and quickly become unfit to eat. Lung complications attended by cough and irritation of the throat are relieved by Eilert's Extract of Tar and Wild Cherry. The pain and restlessness of young children may be alleviated by Dr. Winchell's Teething Syrup. Great prostration, dusky skin and delirium call for stimulants, of which aromatic spirits of ammonia, and quinine with pepper are the most efficient. Give the former in doses of thirty to fifty drops, largely diluted with water, and the latter in from three to ten grain doses, repeated every two, three or four hours, according to the urgency of the symptoms. As convalescence begins, let the patient take Happy Home Blood Purifier, and give a plain, nutritious diet until recovery is complete. After the scabs have all fallen off, the patient should bathe the entire body and hair in carbolized water; clean the finger-nails, and brush them thoroughly with a carbolized lotion; then, wrapping a clean sheet about the person, step into another room, and dress in freshly washed garments that have not been in the sick-room—after which he may safely mingle with his family. At the beginning of the disease, the carpet, curtains, feather bed, and all clothing, except that needed for the patient, should be removed from the room. After recovery the room should be thoroughly disinfected, according to the directions we have given elsewhere. Newspapers and books left in the room also need disinfection. No letters ought to be written from the sick-room, and no family in which some one is sick with infectious disease ought to take books from a public library.

Care of the Nurse.—It is both customary and desirable that patient and nurse be separated from every one who may be infected; but it is at a great sacrifice that any one undertakes the charge of such a patient. Whenever possible, it is better to remove the sufferer to a

hospital, where everything is arranged for the comfort of such cases. When obliged to remain in a private house, the friends and neighbors should furnish generous supplies of food; it is not sufficient that the material for cooking meals be furnished. During the worst stage the smell of the disease permeates everything, so as to destroy the appetite of the attendant for the food cooked in the house; it is unsafe to expose one's self to contagious diseases when the stomach is empty; therefore, the welfare of the nurse demands the assistance of those outside the house in the preparation of meals. It is not necessary to run any risk of exposure in doing this; they may be left at some convenient point, in the open air, from whence the nurse can take them whenever convenient to do so. Happy Home Blood Purifier, in small doses, is an aid in keeping the system in good order and warding off disease.

Malignant Small-Pox—formerly known as *black small-pox*—is nearly always fatal. The eruption is of dark color, or black from the first; there is a brown tongue and all the symptoms observed in fatal cases of typhoid fever. Liberal use of disinfectants and quinine offer the only chance of recovery. In these cases, good nursing is about all that can be done for the patients; but do not give them up without a determined effort to save them. It sometimes succeeds.

Chicken-Pox.—The eruption of chicken-pox appears as vesicles about the size of peas, filled with a fluid which is at first white, but later becomes straw-colored; from the third to the fifth day after their appearance they burst, forming a small puckered scab, which has caused the disease to be mistaken for small-pox. It is sometimes preceded by fever, and occasionally an epidemic of it has prevailed, in which the patients were very sick for several days; it is generally very mild, and requires little treatment except rest, a plain diet and other hygienic regulations. Happy Home Blood Purifier and Health Tonic is needed in these attacks.

Erysipelas is a disease of the blood that is now believed to be due to some germ which exists only in decaying organic matter, hence this is included in the list of "filth diseases." Impure drinking water, unhealthy meat or milk, are probably the sources from whence human beings are infected. It is usually preceded by a chill and a feverish condition, which may be very severe, or so slight as to be scarcely noticed. A red spot appears upon the skin at some point, which increases in size, and in a few hours becomes swollen, hot and painful.

Its most common situation is on the face, and it spreads, when unchecked, over both face and scalp, the features becoming swollen out of all resemblance to a human being. There is less danger when it begins on the limbs. One variety attacks open wounds, which is regarded as a very serious complication. Another form has received the name of *black erysipelas*; it occurs in persons of broken down constitutions, or where the health has been lowered by previous disease. It begins with severe chill and fever, accompanied by rapid swelling of the part affected. This swelling in a short time presents a dusky-red hue and soon becomes almost black, terminating in gangrene (mortification). The fever is like low typhoid; there is a muttering delirium, dark brown tongue, and diarrhoea. The patient is rapidly exhausted, and the disease nearly always proves fatal.

Treatment.—Erysipelas sometimes appears as an epidemic, when it takes on a very severe form. No time should be lost, when a first case occurs, in seeking its origin; and while doing this, abstain from drinking any water from the source which supplied the patient, until it has been boiled; look carefully after the food and ventilation. The room and all clothing used about the patient should be disinfected, the same as in scarlet fever. People who do not understand the necessity of such precautions consider them too much trouble, as well as useless. There is nothing which friends can do that ought to be regarded as trouble when human health and life is at stake. It is far better to take unnecessary trouble, when that is in the direction of cleanliness and safety, than too little, and have to endure a life-time of regret when too late to rectify one's negligence. At the beginning, commence giving tincture of iron, in ten-drop doses, in half a glass of water, repeated every three hours so long as the disease continues, taking care to guard the teeth from injury. Give a cathartic dose of Eilert's Daylight Liver Pills on the appearance of the chill, and if it operates freely, do not repeat it. The best internal remedy, next to the tincture of iron, is prepared as follows: Mix together one fluid drachm of concentrated, refined carbolic acid, 90 per cent.; one fluid ounce of wintergreen essence, and three fluid ounces of simple syrup. Dose, one tea-spoonful, repeated every hour, except when the dose of tincture of iron is due, until the disease begins to improve; afterward, give once every three hours in alternation with the iron. The best local application to check the swelling is a poultice of cranberries. The ripe berries should be inclosed in a soft, clean linen cloth, laid upon a bread

board and pounded until all the berries are mashed—the cloth will be saturated with juice; fasten the cloth to retain the mashed berries, and lay it upon the inflamed spot. Change this for a fresh poultice every six hours; burn the one taken off, immediately, cloth and all. Never throw it out for chickens to eat the remnants of the berries. After several applications, the patient will complain that the skin smart. It may then be bathed with carbolized water, at a temperature most agreeable to the patient, and anointed with Uncle Sam's Liniment. Should the swelling begin to increase, apply a fresh cranberry poultice immediately. When the skin blisters, buttermilk will allay the irritation; apply on linen and change the cloth every half hour, or oftener, if it becomes hot. Carbolized cosmoline sometimes relieves the smarting when nothing else does. Cranberries can not always be had, and the best substitute is tincture of iron diluted one-half with soft water. Paint the inflamed surface with it, using a roll of soft cotton for a brush. Do not touch any blistered spot with it. If it produces too much irritation, add more water. The patient needs to be well nourished; milk, buttermilk, soups and eggs are the principal articles that can be taken. They should be given as often as every four hours. As the inflammation subsides, a fever may linger. A physician is needed for this disease, because it can never be predicted in advance how it will terminate.

The best application for erysipelas in an open wound is iodoform, sprinkled on dry. It removes the burning pain like magic, and restores the wound to a healthy condition.

Diphtheria.—This disease is accompanied by an inflammation of the throat, in which a grayish coating, called a false membrane, resembling canker, forms. At first the lining of the throat looks dark colored, bluish rather than red (it may be purple), and quickly becomes swollen; after this the false membrane appears. This disease, while it occasionally attacks adults, is most common among children. It is contagious, and when a case occurs in a family the patient should be separated from every one except the nurse. The same precautions should be observed as recommended for scarlet fever. It is not usual to take as strict care to avoid giving it to others as in the last-named disease, but is equally important.

The symptoms of diphtheria begin very gradually, with feelings of depression, weakness of muscles, headache, slight fever and sickness of the stomach; the tongue usually is covered with a thick dirty-white

fur (there are some exceptions to this); there is pain on attempting to swallow, and a very disagreeable odor to the breath. The tonsils become swollen, and the glands about the angles of the jaw become tender. These symptoms may be so slight as to attract no attention; and this is likely to be the case when the disease is not prevailing as an epidemic, and consequently is unexpected. We have seen cases among children where the little patient made no complaint, and merely appeared to be dumpish and not seriously ailing until, on attempting to swallow liquid food or water, it would choke and throw some of it out through the nose. An examination showed a dangerous condition of the throat, and death followed in two or three days. The system seemed to have been completely prostrated by the poison, and the nerves were incapable of giving the usual warning of the peril.

The false membrane in bad cases increases in thickness as the disease spreads; and, although at first it is of a white or gray color, it soon becomes brown or almost black and of an offensive odor. The tonsils are sometimes eaten away, and the disease spreads into the nose. Death is occasionally caused by hæmorrhage from a blood vessel that has been destroyed—sometimes by paralysis of the muscles that control the heart and lungs, but more frequently by the filling up of the air passages by the false membrane, which smothers the patient.

There is almost always a low and dangerous form of fever, with rapid loss of strength. The patient is restless, can not bear to be covered, wants fresh air, and sometimes gets out of bed alone and wanders around the room, when permitted to do so, only a few moments before death. The time between exposure and the first appearance of the throat symptoms may be two to five days—sometimes a day or two longer. The duration of the disease, in favorable cases, is from ten to fifteen days; in about seven days the patient either dies or shows signs of recovery. The severe form here described is known as malignant diphtheria, and ends fatally in the majority of cases. The simple variety is attended by little fever and soreness of throat, and has no severe symptoms. One peculiarity of the disease ought to be universally known; and that is, that the mild form is liable to set up the malignant variety in another individual. This is more likely to be the case when the mild form of the complaint appears in an adult, and a child is the one exposed. Although ordinary sore throat, the result of a cold, is an entirely distinct disease, and can not produce diphtheria nor reproduce itself in any one exposed to it, yet the mild variety of diphtheria is not

always recognized as such. For this reason, as well as many others that might be mentioned, the custom of allowing every one to kiss children should be abolished. One family, at least, within the writer's acquaintance has reason to indorse this opinion. A young lady visitor casually remarked, at the breakfast table one morning, that her throat was sore, and she must eat soft food that day. The family consisted of father, mother and three little ones, who were especial pets of the young lady. The mother exclaimed, in alarm, "I sincerely hope you have not brought diphtheria to us!" The visitor had recently spent several weeks in the family of a sister, among whose children there had been some sore throat during her visit. They had not been ill enough to necessitate calling in a doctor; simple remedies had relieved them, and no one thought of their disease being diphtheria. She replied that there was no reason to suppose it was of that nature, and nothing more was thought of it. In a day or two her throat improved, and was not again mentioned. A week later the three little ones of her host sickened with malignant diphtheria, and within a fortnight three little mounds in the cemetery and the loving memory of the lost ones were all that remained to the heart-broken parents. Undoubtedly, the disease was given to them by the guest, who little suspected what misfortune she was bringing with her.

Mild forms of diphtheria are not always free from danger. In no form of it can safety be assured with improvement in the throat symptoms. What the doctors call the "*sequelæ*"—meaning disorders which follow a disease and in consequence of it—are quite as much to be feared as the original complaint. These may appear at any time after recovery apparently begins. In the case of diphtheria, it seems to be due to a failure of the excretory organs to perfectly clear the poison out of the blood. Any important organ of the body may be the one to be disabled, but the most frequent sequel is paralysis.

A boy, seven or eight years old, the son of a physician, had a mild attack of diphtheria, for which he had timely and successful treatment. Ten days after the throat was healed, when he appeared to be free from the disease. Although still confined to the house lest he should take cold, as the weather was damp and chilly, he was again taken sick, at first with intense pain in the stomach, which soon passed off, leaving him perfectly easy, although he could eat no food; everything he swallowed was thrown up after an hour or two. The father made every effort to save him, called in the best advice to be had, but all to no purpose.

A dark spot appeared on the skin above the place where the pain had been located; this spread, and when it reached the vitals, the boy died. An examination after death showed that the upper portion of the intestines had been completely paralyzed for nearly a week previous. It is probable that the immediate cause of the trouble was eating indigestible food. He had been allowed to take what he pleased, and as often as he wanted to eat; neither was he restricted in quantity, it not having been thought necessary, owing to the mild form of his sickness. There is a condition which sometimes follows closely after measles and scarlet fever, strongly resembling diphtheria, but as there is some doubt whether it is properly classed with this disease, it is called *croupous diphtheria*; it is very fatal.

Treatment.—The necessity of guarding the unexposed from contagion is apparent, and, as before stated, should be managed as in scarlet fever. Cleanliness, ventilation and disinfectants are to be considered as an important part of the treatment, but even more important than these is the nourishment of the patient; the strength must be supported by tonics and food. Milk is the best food; it may be taken either hot or ice cold, in small quantities at once, a common gobletfull being enough; add a table-spoonful of lime water or prepared pepsin or pancreatin when the milk alone does not agree. Beef tea, soups, custards, made creams and other kinds of soft food can be swallowed easier than solid. Whatever is given ought never to be kept between meals in the room where the patient lies. Almost everything given as food or drink will absorb the poison which is passing off from the patient's lungs and skin. We would advise the reader never to undertake the management of diphtheria without a physician's counsel. The medicines ordinarily given are chlorate of potash, tincture of iron and quinine. Treatment should be begun with a cathartic dose of Eilert's Daylight Liver Pills. As the iron is very constipating, these pills should be given every second day, unless the bowels move without them. Ask your druggist to prepare this mixture: Tincture of iron, one fluid drachm; chlorate of potash, one drachm; water, four fluid ounces; honey to sweeten. Loaf sugar may be substituted for honey when it can not be obtained. The dose for a child two or three years old is one tea-spoonful every two, three or four hours, according to the severity of the case.

This remedy should be continued until the throat is clean. Other medicines recommended by physicians, and frequently used in this

disease, are these: Sulphur, a small pinch, placed in a pipe, a glass tube or a quill and blown into the back part of the throat three or four times a day. Permanganate of potash dissolved in soft water, of a strength which gives the water a dark pink or violet color, may be used to swab out the throat every two hours, in bad cases. Fasten to a pencil or small stick a roll of lint or old linen, raveled out at the edge to make it soft: dip this in the solution and use for swabbing the throat. This operation should be conducted with gentleness, for the membrane should not be rubbed off the throat; it will grow again, when irritated, and often worse than at first. One of the best washes for a diphtheritic throat is pure undiluted alcohol. Only enough to use once should be poured into a cup at a time, and the swab should be burned after once using. Wash the cup before a second application is needed. Signs of failing strength, shown by dullness, blue lips and livid countenance, call for a stimulant. One of the best is a powder containing from two to ten grains of quinine and one to five grains of cayenne pepper. It may be given in thick syrup, and this dose should be repeated every two or three hours. The size of dose depends upon the age of the patient and severity of the disease, and requires good judgment to determine which is better in a given case. Do not be discouraged and give up all efforts to save a little patient who seems to be swiftly drifting into a hopeless condition. Occasionally, by persevering effort, a case has been saved after having been pronounced incurable by excellent medical authority. We can never tell, when a child is the patient, just how much vitality it possesses, and some remarkable recoveries have been known in this class of cases. Within our experience a little one, two and a half years old, was given up to die. A good old lady, who was a sincere believer in the "water-cure system," obtained permission to try her treatment. She wrapped the child in a sheet wrung out of tepid water, wound a thick woolen blanket around it, and applied pieces of folded linen wrung out of ice water about the neck, covering these with flannel until heated through, then renewing the cold application. She gave bits of ice for the only medicine; the child was very thirsty and took the ice eagerly. This plan was kept up for several hours, when, improvement being visible, it was taken out of the pack, wiped dry, placed between clean sheets; a clean, dry flannel was fastened about the neck, and the bits of ice continued until refused. The patient recovered. We do not mention this to recommend it as a treatment to be trusted at the outset; we would never advise it-until other measures fail,

for the same plan has made other patients worse. The following lotion has apparently saved a few who were suffering from malignant diphtheria. Take two table-spoonfuls of powdered cayenne pepper and a tea-spoonful of common salt; boil one hour in one pint of vinegar and water (equal parts); strain and sweeten with honey or loaf-sugar. It may be given internally in doses of half a tea-spoonful every half hour; the same preparation may be used as a gargle. *Do not use it of this strength except in the malignant form.*

This remedy is more certain when preceded by an emetic, and it must be followed by a cathartic dose of Eilert's Daylight Liver Pills, to avoid paralysis or other dangerous sequel. As soon as the throat heals, give Happy Home Blood Purifier for a month to remove any remnant of the poison from the system. Limit the diet of the patient to plain, easily digested food, until all danger has passed of other complications following the sickness.

Bronchitis.—Inflammation of the membrane lining the bronchial tubes is called bronchitis; it is the most common of the lung diseases, and occurs most frequently in the early spring and late fall, when there are sudden changes from warm, or moderately cool, to cold, damp weather, accompanied by raw winds. The first symptoms are those of a common cold, accompanied with an occasional cough, weariness and headache. There is some fever, a sense of tightness across the chest, hurried breathing with wheezing, and the cough, which at first is short, dry and tight, afterwards becomes deeper and looser. The substance raised from the throat resembles white of egg; this is called mucous expectoration. It becomes thicker after a time and resembles pus in appearance.

This disease has two forms—the acute and chronic; the latter is a result of the former, and is generally met with among weakly persons and old people. The chronic differs from the acute form merely in the mildness of its symptoms and its longer duration. One attack is often followed by another, but it is not often fatal to vigorous middle-aged people; it is a very dangerous disease when it attacks the young, the aged, or the feeble. Breathing deeply, or breathing cold air, excites violent cough. In severe cases the symptoms are very alarming; breathing becomes difficult from clogging of the tubes with mucus, which the patient has not the strength to raise, and death results from suffocation by the accumulated secretion. In fatal cases the patient usually dies between the sixth and tenth days of the attack. The

disease begins to decline, in those who recover, between the fourth and eighth day, and soon subsides or passes into the chronic form.

Treatment.—Bronchitis can frequently be cut short within the first twenty-four hours, by taking, at bed-time, a hot foot-bath, a glass or two of hot lemonade, and applying a hot mustard poultice to the chest, giving, at the same time, Eilert's Extract of Tar and Wild Cherry to control the cough. There should be decided relief in a few hours. When it does not yield readily, give a good cathartic and continue the Tar and Wild Cherry. Inhalation of the steam from hops or water containing camphor soothes the air tubes. A collection of phlegm in the air tubes, which threatens to smother the patient, can only be removed by an emetic. Ipecac, thoroughwort, or lobelia should be chosen for this purpose. The weakness following these emetics may be removed by giving ginger or pepper tea. The food which will do most service is hot milk; give as hot as can be swallowed and a small amount at once.

Chronic Bronchitis requires the persevering use of the above-named cough remedy, together with such general measures as promote health. The body should be enveloped in all-wool flannel. When the patient is able to be out of bed, shoes, rather than slippers, should be worn. The rooms should be well ventilated, and the air ought to be kept slightly moist when heat is supplied by a closed stove. Setting a basin of water upon it will keep the air from becoming too dry. Sometimes it is necessary to change the residence for a time before improvement will progress satisfactorily.

Pleurisy.—The sac or membrane which incloses the lungs may become the seat of inflammation. This is the disease known as pleurisy. It is most prevalent in winter, and next to that in autumn. The weak and the aged are most liable to it, although it is not confined to these, and the usual cause is exposure to cold and wet when over-heated, tired or exhausted. It begins with a chill, followed by fever, and accompanied by a sharp, cutting pain, described as a "stitch in the side," which is increased by a long breath, by coughing and by pressure. There is usually a short, harsh cough, hot, dry skin, and the breathing is frequent, short and anxious. In most cases it affects only one side. At first the two dry, inflamed membranes rubbing against each other produce a "friction sound," which may be heard by placing the ear against the painful part of the chest; but as the disease progresses the sound ceases. The inflammation either terminates in recovery and the

two membranes become naturally moist and smooth, or the inflamed surfaces grow together, or they become separated by a collection of watery fluid, which forms "dropsy of the chest."

In the early stage of pleurisy the patient can not lie on the diseased side on account of the pain; therefore he lies on the healthy side, or on the back. After fluid has collected in the sac its weight hinders the expansion of the healthy side of the chest, and as the pain is by this time nearly gone, he lies on the diseased side or back. The quantity of fluid may vary from a few ounces to several pints. When the quantity is small, it disappears in a short time; but when large in amount, the disease lasts for months, giving rise to difficult breathing. It is rarely fatal in the young and vigorous, but in weakly children and the aged it may destroy life.

Treatment.—The first thing to be considered is the means for relieving pain and preventing "dropsy of the chest." To accomplish this the patient should be kept quiet in bed, and the bowels moved freely with Eilert's Daylight Liver Pills. Hot drinks, which produce sweating, should be given, and a large, hot, moist linseed poultice be placed over the affected side. Should the pain be very severe, a teaspoonful of laudanum may be poured on the hot poultice just before it is applied. It must be renewed as soon as it is cool. A cough or irritation of the throat accompanying pleurisy will be controlled by Eilert's Extract of Tar and Wild Cherry. When the disease passes on to the stage in which the lung sac is filled with fluid, the patient should drink as little as possible. The food should be nourishing, but solid, like broiled beef-steak, toasted bread, etc.; at the same time he should take cathartic medicine, which, by stimulating the activity of the bowels, removes fluid from the blood. There is a remarkable fact which explains this mode of treatment. It is this: The blood needs a certain proportion of water to keep it sufficiently thin to pass through the capillaries; when there is not an abundant supply taken as drink and with the food, and especially when there is an extra amount of water removed from the blood under the influence of medicines which increase the perspiration, the quantity of urine, or the amount of excretion from the bowels, the blood draws water from the tissues to supply the loss. When there is an accumulation in some of the cavities of the body it draws upon that first, and this is the reason why the treatment we recommend empties the lung sac. Dropsical swellings, wherever they appear, are removed in the same way. An

excellent medicine to increase the action of the kidneys, whenever dropsical accumulations are to be removed, is prepared by dissolving half a drachm of acetate of potash in half a glass of lemonade and take for one dose; this may be repeated three times a day. Prepare fresh for each dose. No better constitutional remedy can be found in this chronic stage of pleurisy than Happy Home Blood Purifier and Health Tonic. Should there be chills and fever accompanying it, or should the patient's symptoms be better one day and worse the next, quinine, in doses suited to the age and strength, will be needed. The size of dose varies from one grain to ten, repeated every three or four hours. Both stages of this disease require a doctor's attention, and we would not advise an attempt to do without it where it can be procured.

Pneumonia.—Inflammation of the lungs is commonly caused by a severe cold, which suppresses the perspiration and lessens the action of all the excretory organs. It occurs most frequently in the winter and spring, attacking persons of all ages and all degrees of strength. It is an especially fatal disease among the aged. The custom prevailing at funerals of standing with the head bared during the services at the grave has cost many valuable lives. In almost every instance where an old settler dies in cold weather, and his friends and associates are called upon as bearers and to assist at his burial, one or more of them takes a cold which proves fatal in a short time; generally in the form of pneumonia. This disease lasts, on the average, about ten days, when the patient dies or begins to recover. In fatal cases death seldom occurs before the sixth and sometimes not until the twentieth day. It may be confined to one lung or affect both at once. The right lung suffers twice as often as the left. In about one case out of ten both lungs are affected. The leading symptoms are fever, increased temperature, as marked by the fever thermometer, dull pain in the chest (this is not always present), hurried and difficult breathing, cough, sometimes delirium, and by the fourth day the matter raised from the lungs is tinged with blood, giving it a rust color. The disease is usually at its worst stage between the fifth and seventh days. In favorable cases the symptoms begin to subside at this time; in unfavorable they grow worse until the patient dies.

Treatment.—The first day, give a thorough cathartic, like Eilert's Daylight Liver Pills, and Eilert's Extract of Tar and Wild Cherry, to relieve the breathing and cough. Cover the chest with a hot,

moist linseed poultice, spreading a small quantity of oil or lard over it to prevent its drying on the flesh. If this does not give relief after two or three applications, a mustard paste may be employed. Do not leave it on long enough to blister; twenty minutes is long enough when the mustard is of good quality. Do not trust to the feelings of the patient, because the senses are somewhat duller than usual, and it may blister before there will be any complaint. The most important thing to be done is to keep up the strength of the patient by nutritious diet. Milk, beef extract prepared so as to contain all the meat, beef steak scraped and broiled, soft-boiled eggs, are the principal articles of diet that can be given. The intervals between meals should be shorter than in health, because only a small amount can be taken at once. The air of the sick-room must be kept pure by ventilation; but cold, outdoor air should not be allowed to blow upon the patient, as it makes the cough worse. After removing the poultice, oil the chest, and cover with a layer of cotton batting, which should extend over the chest both in front and behind, and nearly up to the chin; hold it in place by a flannel bandage. Carded wool is better than cotton, when it can be obtained. During recovery the patient will need a constitutional remedy, to purify the blood and to act as a tonic. In rare cases pus forms in the chest, making an abscess that gives rise to blood-poisoning; it then becomes necessary to open it and wash it out; but, as a physician is always required for this operation, it need not be described here.

Asthma is an obstruction of the air passages by contraction of the air tubes, which makes the breathing difficult, gives rise to a wheezing noise, and produces a feeling of tightness across the chest. The attack occurs in paroxysms, usually at about three or four o'clock in the morning. The patient is suddenly aroused from sleep, gasping for breath, and is compelled to sit up to keep from choking. The pulse is feeble, the eyes stare, the skin is cold and clammy, and the distress is so great it seems as if death is about to occur. These attacks seldom prove fatal, and generally pass off in two or three hours.

There are two forms of asthma—moist and dry—and both are often connected with disease of either heart or lungs. When purely nervous, the patient is well in the intervals between attacks. Men suffer from it more frequently than women, and it is most common during middle life. Some medicines will excite a paroxysm of asthma in persons who are free from it when not under their influence.

Quinine produces this effect occasionally, as does the dust from ipecac and several other drugs.

Treatment.—A peculiarity of this disease is that a remedy which benefits one person is likely to have no effect upon another, so far as the asthma is concerned. It is important to keep all the organs of the body in a healthy condition, and any measures needed for this purpose will exert a beneficial effect upon the disease, making it less severe. During the paroxysm, great relief is often obtained from one of the following measures:

1. Mix wine of ipecac and tincture of lobelia in equal proportions, and take half a tea-spoonful every twenty to thirty minutes until nausea is felt, and the secretions in the air tubes come up freely. This is valuable in some cases, but useless in others.

2. Saltpetre, half an ounce; anise seed, half an ounce; stramonium leaves, one ounce; let these all be finely powdered and thoroughly mixed. Make a little cone or heap of one thimbleful of this powder; set it on fire, and breathe the smoke that arises from it.

3. Stramonium leaves, dried, and smoked in a clean clay pipe, sometimes give immediate relief.

4. Inhalation of the smoke from blotting paper, or even common brown paper, which has been soaked in a saturated solution of saltpetre and afterwards dried, often acts like a charm. The saturated solution here referred to is made by dissolving all the saltpetre in a given amount of water that it will hold.

There are other remedies which relieve the distressing paroxysms of asthma, but they are too powerful to be used except under medical advice and with caution. To prevent the return of the paroxysm, Eilert's Extract of Tar and Wild Cherry is one of the most useful medicines. The general health must be improved by such exercise as can be borne; by a plain, nutritious diet that does not overburden the stomach nor give rise to a collection of gas in the intestinal canal, and by regular habits. Happy Home Blood Purifier and Health Tonic strengthens the nervous system, and is of most value in the nervous variety of asthma. Change of climate alone cures many cases.

Croup.—There are two kinds of croup, true and false. The latter is most frequent, and most alarming at first, although it is not nearly as dangerous as the former, for few ever die from it, while nearly one-half who are attacked with true croup die. Both forms of the disease generally occur in children under six years of age, and in cold, damp,

changeable weather. A child goes to bed apparently well, or with some cold and cough. Suddenly, in the night, it begins to breathe loud, with a hoarse, grating sound, intermingled with wheezing; it appears to be in great danger, but there is no fever, and, as soon as relieved by the application of necessary remedies, it sleeps quietly, and the next morning is playing about as lively as ever. The difficulty of breathing never lasts long with proper care—the time varies from a few minutes to a few hours. Not so with true croup—it lasts from two to five days, is accompanied by high fever and a state of the throat resembling diphtheria in appearance. It comes on gradually, the child at first seeming to be merely hoarse; he plays as usual, but does not seem to feel well; about the middle of the afternoon he grows worse and coughs, making a hoarse, barking sound, that once heard will not readily be forgotten. At bed-time there is high fever, considerable distress in breathing, and fretfulness; in the morning he awakens apparently better, and plays during the fore part of the day, but growing worse in the afternoon. This goes on much the same way for three days, when the child grows rapidly worse; he can not lie down, because it is more difficult to breathe in that position; his eyes are pressed outward, making them look prominent and staring, and the face is a picture of distress; he clutches at his throat as if he feels something inside that he wants to draw out; for a time he cries out in a feeble, hoarse voice, but soon ceases to make any sound, seeming to discover that efforts to cry increase the distress. He continues to grow worse for two or three days, and then, if unrelieved, is strangled by the false membrane (which looks like “canker”) that fills up the throat.

Treatment.—In all cases of croup, whether true or false, the first thing to be done is to relax the air passages, so that the phlegm accumulated in them can be raised and gotten rid of. When the attack comes on suddenly, in the night, do not wait for the doctor (when one is sent for) before doing anything, but proceed to apply heat while other remedies are being prepared. Should the fire be out, while waiting for one to start to warm water, heat a piece of flannel by wrapping it around the chimney of the lighted lamp—it can be quickly done—then place it on the front of the chest and throat. Heat another piece and wrap around the feet. Stove lids wrapped in a newspaper and covered with flannel are good to heat the feet. As soon as hot water can be made ready, soak the feet in a hot foot-bath, which may be made more stimulating by mixing in a spoonful of ground mustard. A mixture of

Scotch snuff and lard spread on brown paper and placed on the chest is an excellent remedy. Internally, any one of the following medicines are good. We mention them in the order of their value: Powdered alum, half a tea-spoonful, mixed with syrup and taken every fifteen minutes until vomiting occurs; tincture of lobelia, in five-drop doses, for a child under six years of age, repeated every ten minutes until the breathing is easier; afterward, every half hour, until the patient appears to be sick at the stomach, when no more should be given; tincture of ipecac given the same way. The same measures may be used for true croup, but will not prove so successful. A doctor should always be summoned when the symptoms are not relieved within an hour after giving the hot foot-bath. Of the above remedies, one only should be given, and that the one that can be had the most promptly. As soon as nausea is present, remove the snuff plaster, if it has been used, and replace by a piece of brown paper covered with fresh lard. The brown paper is recommended only because it is always at hand. A sheet of wadding, cotton batting or carded wool are even better than paper, as the object is to retain the heat. Keep the feet warm, and do not arouse the little patient to take medicine while breathing easily. The next day keep it out of the cold air, and should the symptoms reappear the next afternoon, with the hoarse cough, lose no time in sending for a doctor, even though the child should be at play. Some years ago a Philadelphia doctor, in riding through a street on the way to see a patient, noticed among a group of children at play on the sidewalk one with the peculiar cough that is heard only in true croup. He stopped, and asking the number where the parents lived, called to inform them of the dangerous condition of their child. The mother resented what she chose to consider an intrusion, and plainly expressed her opinion that the caller was after a fee. The next day the child was worse, and three days later crape on the door announced to the passer-by that it was dead. This is related to illustrate how unexpectedly this disease proves fatal. The early stages offer the best opportunity to save life; later, when medicines fail to clear out the air passages, and there is danger of strangling, the life is sometimes saved by inserting a silver tube in the windpipe, to let the air in and out of the lungs. The best that can be said of this proceeding is that it occasionally succeeds, when the case must have proven hopeless without it. Physicians, knowing what a small chance there is, hesitate to perform this operation, because when it is done and the child dies they are liable to be

charged with having caused its death—a charge which, under the circumstances, is very unjust. To prevent an attack of croup, see that children have their feet hot and dry on retiring, after exposure to cold and damp; their beds, when placed in a cold room, should be warmed by placing in them hot bricks or anything which will take off the chill. Give them Eilert's Extract of Tar and Wild Cherry during the day for cough or hoarseness; and if they are constipated, a dose, at bed-time, of the Daylight Liver Pills.

Whooping Cough.—This is a disease of childhood, which spreads from the sick to the well who have not already had it once. About six days after exposure it begins with a peculiar, hard, spasmodic cough, occurring in paroxysms with intervals of rest between them, during which the child appears to be well and plays as usual. The coughing spells end when the air has been completely driven out of the lungs, and the patient seems on the point of being suffocated; at this time there is a spasm of the glottis, and the air drawn by force past it causes the whooping sound. The disease lasts from three weeks to several months. Healthy children suffer least, and when the cough begins during the spring or summer months it lasts the shorter period named, but, commencing in the fall, it is apt to be prolonged by colds until spring. Children having whooping cough should be guarded from exposure to cold and damp; at bed-time their feet should be well heated, they should be clad in flannel gowns and their bed be made warm, that they may run no risk of being chilled by cold sheets. Unhealthy children and young infants suffer the most severely from whooping cough. When it comes as an epidemic it is usually most dangerous. Bronchitis, pneumonia and other disorders of the air passages frequently complicate it. The cough is sometimes so hard and protracted that an unusual amount of blood is thrown into the head, the eyes become blood-shot, blood gushes from the nose, and the phlegm that is raised after the coughing spell may be tinged with blood. These cases are dangerous, because a delicate blood vessel within the brain may be ruptured, which will produce very serious mischief. Two cases that we now remember in which this accident occurred, will serve to show the consequences: R. B.—was a very bright little girl, four years of age, when she had the misfortune to take whooping cough early in December. It proved to be very severe, and six weeks later, after several attacks of nose-bleed during paroxysms of cough, after an unusually severe spell of coughing she was

seized with what appeared to be a fit of apoplexy. She was unconscious for a day or two, rallied very slowly, and never quite recovered her former brightness. Dating from that time she was afflicted with epilepsy, which slowly reduced her to idiocy, in which state she lived until her thirty-fifth year, and then died of a fever.

L. C—— was a boy six months old, when he began to suffer from whooping cough, having a severe form of the disease. A similar accident occurred in his case, but with a different result. Paralysis of one side followed the brain injury; in consequence of this the arm and leg on that side grew very slowly as compared with the opposite side, giving rise to great deformity.

Treatment.—All measures that keep the general health good tend to lessen the severity of whooping cough. Of these, ventilation, diet and regular habits of body are the more important. The patient is better off out of doors, when the weather is suitable, and no harm will come of it in winter time, provided he be warmly clad in flannel from head to foot. Cold, raw winds and dampness should be avoided. After playing in the snow see that the feet and limbs are dry and warm. Plain food, such as meat, potatoes, bread and milk, with fresh fruit and baked apples, should make up the diet. A craving for candy or cakes should be gratified by giving sugar syrup, maple sugar or home-made candy—the object being to supply wholesome sugar instead of greasy sweet compounds, or adulterated candies, which invariably disagree with the stomach, and set up irritation that is indirectly the means of aggravating the cough. Dry skin, costiveness or scanty urine call for a blood remedy like Happy Home Blood Purifier and Health Tonic. In a majority of cases the cough will be relieved, or at least be made endurable by Eilert's Extract of Tar and Wild Cherry. It should be known that whooping cough has a course to run, which can not be shortened; it may be made mild and harmless by suitable treatment, while neglect and exposure may greatly prolong it. In children of feeble constitution, or who are already suffering from some other disease, it is a much more serious affair, and a physician should be called in. Should there be sour stomach, diarrhoea or sore mouth with whooping cough, Dr. Winchell's Teething Syrup will prove a better remedy than the Extract of Tar and Wild Cherry. Other medicines which sometimes succeed when these fail in relieving the cough, are lobelia and ipecac, given as described for croup. Chestnut leaves have an excellent reputation in whooping cough, but they some-

times fail. To prepare them place three or four drachms of the leaves in an earthen pitcher, which is first warmed; pour over them one pint of boiling water, cover closely, and let it stand until cool. Sweeten and give during the day as much as the child can be persuaded to take; it should be continued a week or two. Tincture of assafoetida, in doses of five to ten drops for a child two years old, every four hours, is a good remedy when the cough is very severe and there are symptoms of spasms. It will sometimes prove a valuable addition to the Extract of Tar and Wild Cherry.

Chronic Catarrh.—This is a chronic inflammation of some portion of the mucous lining of the cavities of the body, usually located in the nasal passages. First attacks are called "cold in the head," already described as catarrhal fever. They last but a short time, being followed by perfect recovery; but they recur after slight chills, and after awhile are followed by chronic inflammation of the nostrils, which thickens the lining membrane and lessens the size of the passages. The most troublesome symptom is a profuse discharge, which often becomes pus, and is tinged with blood; this lodges in the obstructed passages, and causes hawking, spitting and gagging, sometimes vomiting, before it can be removed. Large flakes of hardened mucus collect; these decay rapidly, producing an offensive odor, tainting the breath, and making the patient an object of disgust to his friends. Boring the nose with the fingers to remove these flakes is a most disgusting habit; when practiced constantly, it enlarges the nostrils and alters the shape of the nose. This disease sometimes becomes a serious menace to health, making the sufferer miserable, despondent, restless at night; and loss of appetite, flesh and strength naturally follow. A changeable climate, especially if it be damp, with great variations in temperature occurring suddenly, is unfavorable to permanent recovery, because the conditions which produced the disease in the first place are always present. Catarrh is curable, however, in any climate, provided it be treated before the bones of the head become badly diseased or the air passages have been so long affected that the germ of consumption has invaded them.

Treatment.—As we have shown elsewhere, the catarrhal discharge is an effort of Nature to compensate for inactivity of one or more of the excretory organs. The first thing to be done is to restore their action, which will be followed by a cure of the catarrh without other treatment than cleansing the membrane from which the discharge

came, unless it has continued long enough to produce ulceration or thickening of this membrane. When this is the case, syringe out the nose once a day with the following lotion: Dissolve one tea-spoonful of common table salt in one pint of hot water, and add to it one fluid drachm of carbolic acid (five per cent. solution; see Appendix). A fountain syringe is the most convenient for this purpose, and should be hung but very little higher than the head, so that the water will flow gently. A strong current of water might force some moisture into the Eustachian canal, which should be avoided. When all is ready, press the finger on the side of the nose, to close the nostril that is not being treated; incline the head over a wash-bowl, and hold the breath while the water flows. The first effort is to be directed toward soaking up the crusts or flakes, and opening a passage into the throat; when the water runs freely into the throat, treat the other nostril in the same way. The first treatment may fail to open these passages; but repeated trials, day after day, will usually succeed. After this soaking and washing, apply a little clean cosmoline, vaseline or camphor ice. Should there be reason to suspect ulceration, apply Uncle Sam's Nerve and Bone Liniment, on a small roll of old linen, as high up as possible, swabbing the nasal passages with it. In those cases where the smell is very offensive apply, after the cleansing, an ointment made by mixing ten grains of boracic acid in impalpable powder with one tea-spoonful of melted mutton suet. Occasionally the ulceration eats through the partition between the nostrils, and affects the bones of the nose. A physician must be consulted for this condition, which is very difficult to cure, and requires skillful attention. The only home application that should be made, in addition to the washing out as above directed, is *mercurial* or *blue ointment*—popularly but incorrectly called "*anguintum*."

Chronic catarrh needs a constitutional remedy, to restore a uniform action of all the organs, and to improve the circulation. Happy Home Blood Purifier and Health Tonic does this effectually; but it is sometimes necessary to change climate or location before a perfect cure is wrought. Damp situations, especially where the soil is undrained, make the disease very persistent.

Consumption.—This is a disease which generally begins in the lungs. For some time previous to the appearance of any marked symptoms, the excretory organs fail to remove all the wastes; some portion of the retained material is carried to the lungs and deposited

there. During this period there is a feeling of languor, with slight loss of strength, and indigestion. This is a condition favorable to the development of the peculiar bacilli, which are found only in consumption. These germs may be taken into the lungs directly from the breath of a person suffering from it, or indirectly through the stomach in milk from cows, or flesh of animals, which have the same disease. When it is fully developed every fluid in the body contains bacilli, and is capable, under favorable conditions, of conveying them to other individuals. The earliest symptom usually observed is a slight, dry, hacking cough, exciting but little or no attention, and is attributed to a cold. It comes on early in the morning, and for some time is scarcely noticed at other hours of the day. After a while a foamy or glairy mucus is expelled from the chest, which increases as the cough grows more frequent, becoming thicker, white in color, or slightly tinged with blood after a severe coughing spell. The loss of strength and flesh goes steadily on; the countenance grows pale and thin, and acquires an appearance of delicacy not natural to it; hectic fever and night-sweats rapidly exhaust the system, and in the latter stages there is diarrhoea. Individuals most in danger of perishing with this disease are those who have a narrow chest, those belonging to families who are subject to lung disease, and those who live in damp situations. People who are compelled to work steadily in any kind of dust, such as stone-cutting and scissors-grinding, are liable to a form of consumption, in consequence of the air cells becoming filled with gritty or metallic particles drawn into them with the breath.

Spitting of blood or slight hæmorrhage, is, in some cases, the first sign that excites alarm. It is not present in all cases, and is not now regarded as necessarily fatal, or a sign that the patient's condition is hopeless—yet it is a serious symptom. As the disease advances the breathing and pulse become more hurried; the voice is weak or hoarse, and chilliness toward evening, followed by slight fever and perspiration, marks the beginning of hectic fever, which rapidly exhausts the strength. The cheeks, during the fever, have a circular, dark-red patch, called the hectic flush, and the palms of the hands and soles of the feet are sometimes affected with a burning heat. A deep-seated pain is felt in the root of the diseased lung, about three inches below the collar-bone, and two or three inches to the right or left of the breast-bone. This pain may extend through to the back and down the arm. It is increased by coughing, and by breathing cold, damp air. The last

stage is marked by swollen feet and ankles, by profuse diarrhœa, and by the corpse-like appearance of the face; the cheeks are hollow, the cheek-bones prominent, the eyes sunken, the nose sharpened, the hair falls out, and loss of flesh increases day by day. Patients differ in their ability to eat and digest food: some have little trouble with their stomach. In other cases, the disordered stomach has directed attention away from the lungs until a late stage in the disease. The mind remains clear and active to the last; and hopefulness, in spite of every discouragement, is a marked feature of the case. It is rare to find a person that is actually beyond help from consumption who can be persuaded that this is true. So universal is this trait, one is quite safe in believing that a person who is despondent, discouraged and ready to give up all hope of recovery is not a genuine consumptive.

There are other disorders which resemble it in producing loss of flesh and strength, hectic fever and night-sweats, yet are not necessarily fatal. Sometimes the resemblance is so close it is very difficult to decide between them; but no other disease has the cheerful hopefulness, which is Nature's blessed gift to the victim of this dread disorder. The average duration of life after the unmistakable signs of consumption appear is about two years. It is known as "quick consumption" when it destroys life within a few weeks or months. As all forms are capable of implanting the germs in those who breathe the same air with the patient, the attendants or nurses should never occupy the same bed, not only for their own sakes, but for the benefit of the patient, who will rest better alone. Sleeping in the same room should be forbidden, as every one takes infectious diseases more easily if exposed while sleeping. Daily exercise in the open air is necessary, and if any signs of lung disease appear in the attendant, the latter should immediately go away.

If there seems to be a hereditary tendency to consumption among the relatives, they should not be permitted to nurse the sick one at all, and should take every precaution that hygienic measures furnish against infection.

Treatment.—The most important part of the treatment relates to hygiene. It is desirable to change the residence to a climate that is either uniformly dry and warm or uniformly dry and cold; but this change should be made much earlier than is the usual practice. A case is not necessarily hopeless because a change of locality is out of the question. Should the ground on which the house stands be damp

and undrained, a sleeping or invalid room on the second floor, with an open grate fire (or stove that may be opened like a grate) will keep the air dry and fresh. As long as the health permits, the patient should leave this room at least two hours every day, while the windows and doors are opened to completely change the air.

All discharges from the patient, including the matter thrown off from the lungs, should be disinfected by one of the disinfectant solutions described in the Appendix. Two complete sets of garments should be provided, one for the day, the other for night wear; immediately upon removing one set, throw it into a moderately strong solution of carbolic acid—about one per cent. is sufficient—and hang it out doors to dry; by this plan the two sets can be safely used a week, which is an important item where help is scarce and the family washing is large.

The diet ought to be generous, and such as will tempt the appetite. The fat-producers are especially needed; and because cod liver oil is one of the most easily digested fats it is extensively used, and with benefit, in consumption. Cream, butter and buttermilk are excellent for persons who are losing flesh, and as much fat should be taken as the stomach will bear.

Flannel next the skin protects the surface from sudden chilling. One of the best medicines to control the cough, relieve the soreness of the lungs, and delay the progress of the disease, is Eilert's Extract of Tar and Wild Cherry. The night-sweats are relieved by cold sage tea (see Appendix for mode of preparing); the dose is one wine-glassful, to which is added fifteen drops of aromatic sulphuric acid, to be taken every three or four hours. Bleeding from the lungs always alarms the patient exceedingly, and this emotion increases the trouble; therefore it is necessary to secure perfect quiet, to keep him in a horizontal position, and to forbid any attempt to talk, even in whispers, until the crisis is past. Let the room be cool, and forbid anything which can excite the nerves. Fluid extract of ergot is the best remedy to control the hæmorrhage and prevent another attack, but it should be administered by a physician; for, unless the medicine be of good quality and the dose be adapted to the patient, it is useless. The diarrhœa of the later stages may be controlled for a time with compound syrup of rhubarb (see Appendix); after this ceases to produce its accustomed effect the addition to it of laudanum or other opiates will renew its power.

Out-door exercise should be taken regularly and for as long a time

as possible without exhausting the patient, and there is no better form of exercise for consumptives than that of digging in the earth. Raising flowers or vegetables, when the patient can have assistance in the hardest part of the work, is preferable to digging in the earth merely for exercise. A delicate, weakly young man was advised to dig a well for the benefit of his lungs. He began the well, working several hours a day at it, and as it grew deeper he brought up the earth by hand to the top, unaided. In the course of three months he not only had a mammoth well, but, what is more to the purpose, a chest capacity several inches greater than when he began, and a sound pair of lungs.

We once knew a lady who had become reduced so low by disease of the lungs, apparently consumption, that she had been confined to her room for three months; her friends had given up all expectation of her recovery. One warm spring day a tramp came to the door begging, and while eating the lunch given him heard the lady cough. His meal ended, he proposed to cure the patient in return for his kind treatment. Curiosity led the family to make some inquiries, but he refused all explanation except that they must lay a piece of carpet on the grass, and over it a woolen blanket; this done, he persuaded them to carry the patient out and place her on this blanket; then, calling for an old knife, he showed her how to dig up the turf and earth near her. As soon as she began to feel tired she was assisted to her room, and ordered to repeat the exercise every pleasant day for one month, when he assured her she would be well. The very oddity of the prescription caused it to be faithfully tried; she began to improve immediately, and although the end of the month did not find her cured, she was greatly improved, and had learned anew the fact that sun and air and exercise are most potent remedies. She afterward recovered, and is still alive.

Diet of Consumptives.—The strength of the patient needs to be carefully preserved, and no better mode of doing this can be found than in careful selection of diet. Food should be taken not less than six times in twenty-four hours; three full meals at intervals of six hours, with light lunches between. No more food should be taken at one time than can be digested easily and fully before the next meal, and it should never be taken when the patient is suffering from bodily fatigue, mental worry, or nervous excitement. Half an hour's rest while lying down will often prove of more value as an aid to digestion than medicine. It is better to eat but a single article at a time, as a varied diet prolongs digestion, and makes it more difficult. A due proportion of

different kinds may be taken by eating fats and starchy food at one meal, albumen at another, and so on through the list, thus avoiding sameness, and tempting the appetite by frequent change. Solid food ought to form the larger share of the diet, so long as it can be digested. When the pressure of food in the stomach excites cough, or when paroxysms of coughing have induced vomiting, Eilert's Extract of Tar and Wild Cherry should be given to allay the cough.

Model Diet List.—The following bill of fare from which to select a diet is a useful one for all wasting diseases, as well as consumption:

1. On waking, one-half pint equal parts hot milk and Vichy water, taken at intervals through half an hour.

2. 8 A. M. Oatmeal with abundance of cream, little sugar; rare steak or loin chops with fat; cream potatoes; soft boiled eggs; cream toast; small cup of coffee; one or two glasses of milk.

3. 9 A. M. Half ounce cod-liver oil, or one ounce peptonized cod-liver oil and milk.

4. 10 A. M. Half pint raw meat soup; thin slice stale bread.

11 to 12 A. M. Sleep.

5. 12:30 P. M. Some whitefish; very little rice; broiled or stewed chicken; cauliflower; stale bread and plenty of butter; baked apples and cream; milk or kumiss, one or two glasses.

6. 2 P. M. Half ounce cod-liver oil, or one ounce peptonized cod-liver oil and milk.

5:30 to 6 P. M. Rest or sleep.

7. 6 P. M. Some thick meat or fish soup; rare roast beef or mutton; spinach; slice of stale bread; custard pudding; ice cream.

8. 8 P. M. Half ounce cod-liver oil, or one ounce peptonized cod-liver oil and milk.

9. 9 to 10 P. M. Pint iced milk; cup meat soup.

10. 1 to 2 A. M. Glass milk, if awake.

To make the meat soup above referred to, add five drops of hydrochloric acid to one pint of filtered water in an earthen pitcher or jar; chop one pound of raw lean beef very fine and soak it in this liquid for an hour or two, then strain through cheese-cloth, pressing out the juice.

Mumps.—The largest of the salivary glands (the parotids), which lie under the ears and near the angles of the under jaw, once in a lifetime are liable to be affected with an acute inflammation called the mumps. It begins with slight feverish symptoms and swelling about

the angle of the jaw ; the parts around become hot, painful and tender to the touch. Chewing, swallowing and talking all excite pain in the inflamed gland. The disease reaches its height in four days, then gradually disappears. Mumps is usually a mild affection, unless the patient takes cold, therefore little need be done for it except to avoid exposure that may invite a chill. At its first appearance the alimentary canal should be cleared out by a cathartic dose of Eilert's Day-light Liver Pills. The only local application of any benefit is Uncle Sam's Nerve and Bone Liniment. After bathing the swollen parts with it, apply dry, hot flannel to relieve the pain. The disease is contagious, but has this peculiarity: a person may be exposed to it many times without taking it, and, again, will have the disease without knowingly having come in contact with any one that has it. It occasionally affects the gland on one side only, and then protects the patient against another attack only on that side.

Quinsy (Tonsillitis).—This disease begins with a chill, followed by fever, a flushed face and husky voice. The tonsils soon become inflamed, swollen, painful, and swallowing is very difficult, liquids sometimes being thrown through the nose. Usually quinsy runs its course in a few days, but the tonsils remain enlarged for some time, if not permanently. In severe cases there is constant, throbbing pain, and one or both tonsils become filled with pus; these cases need a physician's attention, for instances have been known where the swelling became so great as to close the air passage and choke the patient to death. The same treatment which is useful in all diseases that originate in a cold is here required—that is, keep the bowels open, the feet warm, and avoid exposure to draughts. A gargle made by dissolving bi-carbonate of soda in soft water may be used freely; it gives great relief. Eilert's Tar and Wild Cherry lessens the irritation in the throat; flaxseed lemonade is a grateful drink. Hot applications about the throat relieve the pain. In case pus forms, the tonsils must be lanced; but as this is a delicate operation, owing to the danger of hæmorrhage, a physician should be called. When they remain permanently enlarged, paint them daily with tincture of iodine, and take internally Happy Home Blood Purifier and Health Tonic. The last-named remedy is useful in preventing renewed attacks, to which those who have quinsy once are more exposed than others.

Dyspepsia is the name of a group of symptoms, rather than

of any particular disease. The word means "difficult digestion," and is sometimes defined as "the indigestions." It may arise from over-feeding, from under-feeding, from irritating articles of food, from eating when the body is exhausted, from bolting the food, or in consequence of disease located in any one of the organs directly or indirectly concerned in digestion. It is evident then that each case must be studied by itself to get at the cause; for, until this is removed, no treatment will permanently restore the health. The chief symptoms are a feeling of weight or fullness in the stomach soon after taking food. "Belching of wind," heartburn, nausea, foul tongue, bad taste in the mouth, headache after eating, palpitation, irregular bowels, loss of appetite, or sometimes a ravenous appetite, drowsiness during the day, restless nights and a tired feeling on awaking. These symptoms vary in severity; in one person they may be slight, merely making the patient uncomfortable for two or three hours after eating; in another, they may incapacitate the sufferer for business or labor. The worst form is that state called hypochondria, or "hypo." The victims of this last disorder have all manner of dismal forebodings; they are incapable of devoting themselves to their business; therefore, are regarded as lazy by their friends, while their imagination pictures, one after another, a terrible fate from some dread disorder, of which they have not a symptom. We have heard of one such patient who imagined that his legs were changed into glass, and was on the constant lookout lest some one should carelessly drop something upon them, or accidentally run against them and shatter them to atoms. A curious feature of this disorder is, that while the patient may have the most fantastic notion in regard to his own ailments, he is perfectly competent to transact business, and shows no signs of unbalanced mind except when his imagined infirmity is referred to. In one instance, where a man believed that his flesh had been turned to stone, and his joints locked so that he could not bend them, a financial panic swept away his fortune and left his family entirely dependent upon his exertions for their support. Under the stress of stern necessity he forgot himself, and when the crisis was past, and he had time to remember, he saw the folly of his delusion and never had any return of it.

Dyspepsia may be caused by anything which interferes with the healthy action of the stomach or intestines.

Treatment.—Seek for, and remove, so far as may be, the causes which originated the disorder. Only such food should be taken as

agrees with the stomach in its weakened condition. This can be determined by the patient better than by anybody else. It is customary to recommend graham bread for dyspeptics indiscriminately; this is mischievous advice, for many such patients can not eat it without an aggravation of their trouble. When it is well borne it is useful. Generally, stale bread—that is, bread a day or two old—will agree better than any other. Dry toast is better for many; others can not eat bread, because there is some interference with the digestion of starch; such persons find milk and fresh meat more suitable. Remember, scrupulous selection of diet is required no longer than the disease lasts; but without it the disease can never be cured. It requires great self-denial to omit articles one has been accustomed to eat freely, and only those whose will is capable of controlling their appetite can be promised recovery after they have become the victims of dyspepsia in a severe form. The use of alcoholic liquors gives rise to the most troublesome form of dyspepsia known, and, in time, sets up such changes in the coats of the stomach itself, in the liver and intestinal glands, that anything like perfect digestion is out of the question, and death from exhaustion is only a question of time. All persons who find it necessary to take a drink of liquor before they can digest food are nearing the stage when failure of their natural powers is at hand. They are almost hopeless cases; practically, they are quite hopeless, because, of the number who have become enslaved to this extent, it is only an extremely small per cent who are by any means yet discovered relieved of their bondage and restored to self-control and health. A kind Providence has so ordered that now and then one is saved to keep alive hope in the drunkard, and to hold out an inducement for him to strive for freedom from his chains; but the small number who are rescued—not more than one in a thousand—offers no encouragement to him who recklessly pursues a course he knows to be beset with extreme peril to health, to happiness and to all that man holds dear.

Happy Home Blood Purifier, while being an excellent remedy for dyspeptics, possesses the additional advantage of containing no alcohol. All hygienic measures of diet, ventilation, exercise and the bath are required. It will always be an advantage to leave home for a time, when it is possible; for change of scene, freedom from familiar daily worry and care, will give rest to body and mind as nothing else can. A thorough washing out of the stomach every morning, before breakfast, is very beneficial. To do this, drink a pint, or as much as

possible, of water as hot as can be swallowed. Sip it slowly, taking about fifteen minutes to drink a whole pint. This should be finished half an hour before taking breakfast. Occasionally, cold water answers better, but in most cases the quantity necessary to do the work well gives the patient chilly sensations. The following medicine is useful whenever the breath is foul, the tongue coated or the stomach is sour: Let your druggist prepare a solution containing re-distilled carbolic acid, one drachm; distilled water, three ounces; winter-green essence, one ounce; mix, and take one tea-spoonful in half a glass of water three times a day. Charcoal biscuit, which may be bought of your druggist ready prepared, are excellent to take after eating, when sour fluids rise in the throat; one or two of these biscuit will be sufficient at one time to sweeten the stomach. They are less injurious and more effectual than soda, which is often used for this purpose. As dyspepsia comes on gradually, and seldom becomes troublesome enough to demand attention until it has existed for many months, and sometimes for years, the return to health will be slow, and takes place only as diseased material is removed, atom by atom; and this takes a long time. The practice of trying one plan a few days and then abandoning it for another, because immediate relief is not obtained, is worse than useless, for it interferes with Nature's work, and actually makes recovery more difficult than if no treatment at all were employed.

Diarrhœa.—This disease is marked by more frequent and thinner passages from the bowels than natural. It is more apt to occur during the summer and autumn than at any other time of year.

The most frequent cause is error in diet; but it occurs as a symptom of various diseases. It is attended by purging, nausea, furred tongue, foul breath, flatulence, belching of wind or sour fluids from the stomach, griping pain, and, if the disease continues long, great loss of flesh. Children more frequently suffer from it than grown people. As we have said elsewhere, diarrhœa is usually an effort of the system to dispose of morbid material which is not removed through the proper channel because one or more of the excretory organs is disabled, therefore, caution should be used in checking a diarrhœa. A little child, about one year old, was attacked by a profuse watery diarrhœa; after giving some simple domestic remedies without relief, a friendly neighbor advised laudanum to check it. The medicine was given as directed, and the mother was delighted with its prompt action;

but, a few hours later, the little one began to grow stupid; its face was flushed, its head hot, and its eyes rolled up. The family physician being called in pronounced it brain fever, and, notwithstanding that everything possible was done, in ten days the little life went out, the victim of ignorant dosing. Do not be in a hurry to check a diarrhœa; it should not be stopped suddenly; there is danger to grown people as well as to children in this method of treating it.

Treatment.—First of all, examine carefully to see if the trouble may not really be constipation. In many cases, where constipation is due to torpor of the colon, the bowels become packed full of excrement, and after Nature has tried every other way to dispose of it, she sets up a diarrhœa. This cause calls for cathartics to clear out the intestinal canal, and requires medicine which acts upon every part of it, like Eilert's Daylight Liver Pills. The symptoms accompanying diarrhœa from this cause may very easily be mistaken for typhoid fever, and there is no reasonable doubt that typhoid fever does sometimes originate in an overloaded colon and consequent blood pollution. The action of the cathartic often needs assistance from injections, to prevent injury or irritation from the putrid fæces: these will be more fully described in connection with constipation. After the intestinal canal is cleared out this form of diarrhœa will cease, and the symptoms accompanying it will disappear without further treatment. The diarrhœa of childhood may be safely cured by Dr. Winchell's Teething Syrup. This excellent syrup is misnamed; one would suppose it designed merely for teething children and the disorders accompanying the cutting of the teeth. This is an error; the remedy is composed of materials prescribed by physicians generally, for all disorders affecting the alimentary canal, including sore throat (not diphtheria), cankered mouth, disordered stomach and bowels and irritation of the rectum, as shown by prolapsus or pushing out of the lower part of the bowels: diarrhœa requires no other medicine except when it is a sequel of constipation, as above described. Sudden chills and unsuitable food are responsible for most of the diarrhœas of childhood, not omitting cholera infantum. The skin needs a daily bath in sickness, and the food must be given regularly. The best diet for diarrhœa is milk and lime water, using a table-spoonful of lime water to a glass of milk. It may be given hot or cold, as best agrees with the patient. When there is considerable fever and great thirst, bits of ice added to the milk make it more grateful to the patient. A flannel bandage pinned

snugly around the bowels often affords great comfort; the bowels need to be kept at rest until the irritation subsides; therefore, when possible, the patient should lie in bed. Thoughtless mothers are often seen carrying little ones suffering from diarrhoea with them while they call upon a neighbor for a little chat, or go to the store for shopping. Such children ought not be taken away from home, even to show to a doctor. We have known cases where this cruel act has apparently destroyed all chance of recovery, and has been followed by death in a few hours, when previous to the "outing" the symptoms were all favorable to recovery. Rest in bed, warmth to feet and abdomen, milk and lime water diet, and when the stomach is sore or there is canker in the mouth, the carbolic acid solution, as recommended in dyspepsia, and Dr. Winchell's Teething Syrup in doses adapted to the age, will cure most cases of diarrhoea in children.

Dysentery is a disease in which there are frequent slimy or bloody stools, attended by griping pains and great straining or tenesmus in the anus. It consists of an inflammation of the large intestine, and is accompanied by fever and rapid loss of strength. It is most prevalent in hot weather, or rather when the days are hot and the nights cool. It may be caused by impure water, or by diseased substances used as food. Unsuitable diet, colds, exposure to chilly night air when fatigued, favor an attack; but these alone can not produce the disease. It occurs in two forms: the mild is easily managed by home treatment, as hereafter directed; the severe form of the disease is not only dangerous but contagious. Those engaged in caring for patients suffering from it should take such precautions as we have recommended for typhoid fever. This variety of dysentery often passes into the chronic form, producing ulceration of rectum, colon, or both, which has been known to cause trouble for years afterward.

Treatment.—Perfect rest in bed in a well-ventilated apartment is of the first importance. At the earliest appearance of the disorder give a table-spoonful of castor oil, with ten or fifteen drops of laudanum (this dose is for an adult); but if the early symptoms have not been attended to and the disease has lasted a day or two, do not give this. The following is a disagreeable but very efficient remedy, which has proven successful in the most fatal epidemics, and when every other medicine failed. Let your druggist prepare it after this receipt: Take of Glauber's salts, half a pound; water, one and a half pints; dissolve; then add nitro-muriatic acid, two fluid ounces; powdered alum, one

drachm and eight grains; mix. Dose: one table-spoonful in a gill of water every hour until it slightly operates on the bowels, after which, every three or four hours. Protect the teeth by taking through a straw, and rinse out the mouth with water containing soda or saleratus, using as much as will dissolve in the water. The food should be as free as possible from bulky waste, and concentrated, like milk, or beef extract, for the strength is rapidly exhausted unless nutritious food is plentifully supplied. Slippery elm or flaxseed tea may be used to quench thirst; rice water may also be given. Let no water be taken that has not first been boiled; it may be cooled and made palatable by pouring from one pitcher to another and by adding clean ice. Dr. Winchell's Teething Syrup, following the preliminary dose of castor oil, is the very best treatment for children; for them the laudanum had better be omitted and peppermint be substituted. The distressing tenesmus, which intensifies the suffering, may be relieved by giving a small injection into the rectum of thin corn starch, flaxseed or slippery elm tea, to which a little laudanum is added, about twice as much as the dose by mouth for a patient of the same age. A folded pad of cotton should be pressed firmly against the anus for a few minutes to retain the injection.

Cholera Morbus.—Vomiting and purging usher in this disease. There may also be griping, cramping pains in legs and arms and great fear of dying. It usually occurs in hot weather, and after eating unripe fruit, unsound vegetables, or in consequence of sudden suppression of perspiration. The discharges are usually tinged with bile; both vomiting and purging are accompanied by severe pain, and in the intervals there is urgent thirst. The disease runs a rapid course, and in favorable cases the distressing symptoms gradually subside within a few hours, with proper treatment. In more severe cases the symptoms become alarming and may continue two or three days; extreme exhaustion ensues, attended by depression, hurried breathing, cold sweats, hiccough and feeble pulse. Death may occur, but the majority of cases recover. Those who have had one attack must be very careful for several weeks afterward; a second attack very soon after a first is always more severe, and frequently dangerous. Such persons who are obliged to travel and stop at hotels should be provided with a remedy to take on feeling the symptoms of cholera morbus, because it is not always possible to obtain assistance in time to save life when among strangers.

Treatment.—There are many “cholera mixtures,” almost any of which are beneficial. This one is probably as good as any. Take tincture of ginger, opium, capsicum, rhubarb, spirits of camphor and a five per cent. solution of phenic acid, using equal parts of each; mix them. Dose: twenty to sixty drops in water every half hour until relieved. Ice may be given to quench thirst. Should the purging threaten to destroy the patient, inject into the rectum thirty to sixty drops of laudanum in a little thin starch.

A large mustard plaster should be placed over the abdomen as early as possible, and removed when it reddens the skin; replace by a cloth saturated with Uncle Sam’s Nerve and Bone Liniment, covered with dry, hot flannel. After the attack is over, Happy Home Blood Purifier and Health Tonic, with caution in diet, will prevent a repetition of the disease.

Cholera Infantum.—This occurs generally in hot weather, hence the name “summer complaint.” The principal symptoms are vomiting, purging of green or yellow matter, slime or blood, attended by pain or uneasiness, and swelling of the abdomen, with some fever. It frequently begins with simple diarrhoea, and continues for some time before the symptoms become severe enough to excite any alarm; neglected, it progresses until the child is almost exhausted, when a slight cold, which suppresses the perspiration, or unripe fruit, or sour milk, excites an increased inflammation in the intestinal canal, and the child grows suddenly worse, sometimes dying within a few hours after the mother or nurse becomes aware that it is in danger. After this stage is reached, it is impossible to save the little patient. It is wise to treat all diarrhoeas in infants and young children, from the start, as serious complaints that may become dangerous if not promptly relieved.

Treatment.—This is the same as recommended for diarrhoea. A caution is in place in reference to milk; as stated in another place, this article is useful when sour as well as when sweet, but at the point where it is changing from sweet to sour, it is sometimes actually poisonous. As we have not learned why this is so, or what milk is, or is not, dangerous at this point, it is prudent to regard all such milk as unsafe. Add lime water to the milk, or if there be any reason to suspect that lime disagrees (which is seldom the case), substitute calcined magnesia for lime water. Give one dose of castor oil at the beginning of treatment to clear out the bowels, and follow with Dr.

Winchell's Teething Syrup. A flannel bandage should be fastened around the bowels. It is not unusual, after beginning this treatment, for the skin to break out all over in a fine, bright-red rash, resembling scarlet fever. This shows that the skin has begun again to act, and is assisting other organs. It is an excellent symptom, and all cases where this is not "driven in" by carelessness, the child has recovered. It causes intense burning and dreadful itching, which makes the child restless, irritable and sleepless, unless the following plan is pursued: Bathe the child from head to foot with warm water, containing vinegar enough to make it taste distinctly sour, use no soap, and wipe dry with a soft cloth. Let this be done in a warm room, with doors and windows closed. Anoint the whole body with carbolized vaseline, containing five grains of carbolic acid to one ounce of vaseline, using a very small quantity, not enough to make the skin greasy, but just enough to supply the natural oil that is wanting in this condition. Dress in clean cotton or linen; flannel irritates this eruption. Keep the child from taking cold, and give nothing except milk and lime water for food until the rash disappears. Pursue the other treatment recommended, and the child will soon be free from danger.

Cholera.—Asiatic cholera is an appalling form of disease that comes as an epidemic. Purging and vomiting are the first symptoms. The discharge from the bowels is a thin, colorless fluid, like rice water, and is spurted out with spasmodic force. There is great prostration, cold, clammy sweats, and terrible cramps. The body becomes bent, the limbs twisted, the countenance corpse-like, the pulse too feeble to be counted, the eyes sunken and surrounded by dark circles. The patient sinks into unconsciousness and soon dies unless a favorable change speedily takes place. A physician should always be summoned, but there is no known treatment that can be depended upon to cure it. In Europe, during recent epidemics, the best of skill was employed, but nearly as many died as in Asia, where thousands suffering from it have no treatment whatever. It is believed that it is carried through water, as well as air; therefore, when an epidemic prevails, all drinking water should be boiled before drinking. A preventive that, with the precaution just mentioned, has much testimony in its favor, is to drink freely of sulphuric acid lemonade, by which is meant water made sour by adding sufficient aromatic sulphuric acid to make it the strength of lemonade. Protect the teeth by taking it

through a straw, and afterwards washing out the mouth with saleratus or soda and water.

Treatment.—Pursue the plan recommended for cholera morbus. Remember that *when cholera prevails all diarrhœas are dangerous*, because it is often preceded by a loose condition of the bowels. It is best to place the patient in bed and apply mustard to the abdomen, and other remedies before described under cholera morbus. The mixture of Glauber's Salts, recommended for dysentery, is highly indorsed by some physicians of experience; it is given in the same way and for the cholera diarrhœa. Sometimes this can not be taken on account of the vomiting, and then chloroform or chloric ether, from ten to twenty drops for a dose, in water, will occasionally give relief. Tincture of camphor, in ten to thirty drop doses, frequently repeated, is believed to be very effectual. Salt and water sometimes allays the vomiting. In the stage of collapse, apply dry heat to the body; a dose of ether in water is sometimes useful; give half a tea-spoonful every fifteen minutes in a table-spoonful of water. Cramps of the muscles may be relieved by rubbing, and when the calves of the legs are the parts affected, a sudden twist of the great toe will often stop the contractions. Use ice for the thirst, which is intense. Those who live through a first attack commonly have several weeks of fever following before convalescence begins, during which they must be managed with skill to prevent a relapse. A physician should have charge of the case.

During an epidemic of cholera, regular habits, in every respect, are the greatest safeguard. In addition to the precautions already named, a course of Happy Home Blood Purifier will place the system in a healthful condition, which is the most certain method of escaping all disorders which prevail as epidemics.

Colic.—A severe griping pain, and a sense of twisting, especially about the navel, occurring in paroxysms, is termed colic. There may be nausea and vomiting, and the bowels are constipated. It may be caused by indigestion, by retained excrement, by the poisonous excretions which the skin should have removed, and by the slow action of mineral poisons, such as copper, lead, etc.

Treatment.—The first thing to be done is to alleviate present pain; the next to remove the cause, and thus prevent a future attack. Apply heat over the abdomen; this may be in the form of cloths wrung out of hot water, mustard paste, or a stove lid or plate

heated and wrapped in a newspaper—anything, in fact, that will feel hot to the surface. Internally there is a chance for a wide choice. Hot peppermint tea, hot ginger tea, pepper tea, five to ten drops of chloroform in one table-spoonful of water, repeated every ten minutes; ether given in the same way; hot water drank in the quantity of a pint or more; for children give Dr. Winchell's Teething Syrup internally, and apply dry heat externally. It is not enough to apply heat to the abdomen; it should also be applied to the buttock and the lower part of the back, across the hips. Should the stomach be full of irritating substances an emetic will be the best thing to be given at first. After the attack is over, give a dose of Eilert's Daylight Liver Pills, and follow it up by Happy Home Blood Purifier and Health Tonic, to remove the debility that is always present. This remedy is extremely beneficial when the colic is due to mineral poisoning, but the source from which poison was received must be cut off before any medicine can be expected to cure the patient.

Constipation.—This is a condition of the bowels in which the evacuations do not occur regularly and of sufficient quantity, or are expelled with difficulty. It is owing to a deficient action of the muscular coat of the intestines, to a lack of secretion from the mucous membrane lining them, or to a badly selected diet; sometimes all these causes work together. Deficiency of bile, or a stoppage of the duct which prevents it from flowing into the duodenum; sedentary occupations; tight lacing; the abuse of cathartic medicines; catarrh of the intestines produced by chilling the abdomen or buttock; some medicines, such as tincture of iron, alum solutions, etc., as well as strong tea, are all productive of constipation.

Treatment.—This requires regulation of the habits, as well as medicine. The bowels, by diligent attention, can be trained to regularity, and without it no medicine can restore them to their natural action. It is necessary to attend to the calls of nature on the first signal; if this be neglected, the warning will cease to be given, and it is only by great effort that the bowels can be brought back to the habit of letting their wants be known. Whenever possible, the habit of a daily evacuation of the bowels in the morning should be cultivated; but if business interferes, let it be done in the evening, when there is more leisure. Severe straining should be avoided, as it tends to induce piles. Eilert's Daylight Liver Pills, alternated with the Happy Home Blood Purifier and Health Tonic, will cure this disorder, provided they

be assisted by regularity in eating and prompt attention when the bowels feel like moving.

Sometimes, through neglect or disease, they become overloaded and partially paralyzed; they then need to be assisted by injections to soften the masses and wash them away. Under these circumstances it is a good plan to take a cathartic dose of Eilert's Daylight Liver Pills at bed-time, and at the same time inject into the rectum one ounce of pure glycerine and prevent its escape. Should there be difficulty, either from bulk or hardness, when the pills produce a desire for a movement of the bowels, prepare the following, which is variously known as an "enema," "clyster," or injection: Take one table-spoonful of common salt, two table-spoonfuls of lard or olive oil, the same quantity of molasses, and stir all together in one pint of warm water. This is to be thrown into the rectum by a suitable syringe, while the patient is lying down. The quantity for an adult is from ten fluid ounces to one pint; for a child ten years old, half the amount; and for an infant one year old or less, from one to three fluid ounces.

Worms.—There are no less than seven distinct kinds of worms that inhabit the human body, and the number of parasites exceed thirty. There is almost no organ or tissue in which they may not lodge and live. The eggs and larvæ of worms, many of them too small to be seen by the naked eye, enter the stomach with impure drinking water, and also through raw or imperfectly cooked pork.

The symptoms of worms in the intestines are itching of the nostrils and anus, voracious or impaired appetite, foul breath, pallor about the mouth, bluish circle around the eyes, disturbed sleep, grinding of teeth in sleep, swelling of abdomen, irregular bowels, and a harsh, dry cough. Not all of these symptoms are present in any one case, and sometimes none of them. The only certain proof that worms are present is the passage of some of them, or parts of them, in the fæces. Examination of the dead has unexpectedly shown that the irritation of worms, even when their presence was unsuspected, is capable of giving rise to a great variety of disorders, among which may be named convulsions, inflammation of the bowels, abscess, lock-jaw, and kidney complaint. Worms can not inhabit a healthy intestinal canal; there must be an accumulation of unhealthy material within it to furnish a home for them.

Treatment.—Intestinal worms of all kinds, except tape-worms, whether occurring in children or adults, may be destroyed and

removed by Dr. Jaques' German Worm Cakes; these should be taken at bed-time, in doses suited to the age. They should be preceded by a cathartic dose of Eilert's Daylight Liver Pills, to clear out morbid material which envelops the worms, and protects them from contact with medicines that can destroy them. The worm cakes should be taken three days in succession and followed by a cathartic. Wait one week for any germs that have been left behind to develop, then repeat the medicine exactly as before.

Tape-worm requires different treatment, and the medicine that removes it in one case will fail in another. There is no agreeable mode known of removing this parasite. As good a plan as any, to begin with, is to take a dose of Eilert's Pills at bed-time, and go without eating for twenty-four hours. After the pills have operated, take pumpkin seeds prepared in this way: Peel the shell from enough seeds to fill a pint cup with the meats; pound these fine and mix with cold water to make a thick paste, and take all for one dose. After an hour, take a drachm of ether in divided doses, in water or capsules, and an hour after this a dose of castor oil.

The worm usually comes away whole, if at all; the head should be looked for; it is distinguished from the other joints which make up the worm by a hook-like attachment, with which it fastens itself into the wall of the intestine, to keep from being carried out with the excrement. This worm is continually casting off joints, which may be seen in the bowel discharges, and are the only certain proof that a person has tape-worm. The joints will continue to grow so long as the head remains. Sometimes the patient who has had a worm removed, head and all, will be astonished to find joints in the passages, and is inclined to believe there has been some mistake. There is a variety of tape-worm that is found in pairs, and when one is removed of course the one which is left will continue to cast off joints as before. It will be necessary to repeat the treatment, which consists in emptying the bowels to expose the worm to a medicine which can stupefy or destroy it; this medicine must be as strong as the patient can bear, and must be followed by an active cathartic to remove the worm, while it is under the influence of the medicine. The patient must abstain from eating during this time, in order to leave the worm unprotected. Another preparation which may be used in case the pumpkin seeds fail, is extract of male fern, taking from half a fluid drachm to one fluid ounce, according to age, mixed up with a little gum water. The

patient should eat nothing but a little milk and bread for one day, take a cathartic at night, fast till the next day noon, and take the dose of medicine an hour before dinner; then eat as usual, and at bed-time take another dose of Eilert's Daylight Liver Pills. The success of this treatment depends almost entirely upon the quality of the male fern; only the fresh extract is of any benefit.

Pin-worms.—Small, white worms, about half an inch long, are often present in large quantities in the rectum of children. They give rise to intense itching, and make the sufferer intensely nervous, when they do not more seriously affect the health. Such children need a pleasant, bitter tonic to restore the digestive apparatus, which is always at fault in these cases. Happy Home Blood Purifier and Health Tonic is well suited to them. A plain diet, consisting largely of bread and milk, is desirable. The worms themselves are removed by injections. A tea-spoonful of table salt in half a glass of water injected into the rectum once a day, for about three times, will usually destroy these worms. This treatment may need to be repeated two or three times, at intervals of a week. Other injections useful for the same purpose may be prepared as follows: 1. Place one ounce of quassia chips in one quart of soft water, let it stand over night, and strain off the water, which will taste very bitter. Use half a tea-cupful or more for one injection, and repeat as recommended above. 2. Aloes, twenty grains; carbonate of potash, seven grains; thin, boiled starch, five fluid ounces. Place the aloes and potash in an earthen bowl, pour on a very little of the starch and rub them together; add the remainder of the starch, little by little, mixing the ingredients evenly through it.

Diseases of the Liver.—It is customary to attribute all the ill feelings that appear to originate below the diaphragm, to the liver. Although this is a large and important organ, which has considerable to do with blood-making, yet it does its work so well that it is not nearly so often ailing as it is supposed to be. Retained excretions are much more frequently responsible for the symptoms called bilious than the liver itself. Fortunately, the most of the drugs which are supposed to be liver medicines do not affect the liver at all; therefore, it is seldom the sufferer for this error in diagnosis. There are, however, a few diseases of this organ to which we wish to call attention.

Congestion of the Liver.—The symptoms are a sense of weight and fullness in the vicinity of this organ, with nausea, foul tongue, headache or dizziness, slight torpor of the bowels, and some jaundice.

Sometimes the liver may be felt through the abdominal wall below the ribs, enlarged, hard, and tender on pressure.

Side-ache, or Stitch in the Side.—This is generally due to a temporary congestion of the liver following violent exercise, particularly when taken soon after meals.

Inflammation of the Liver.—This is attended by pain in the region of the liver, which is increased on pressure, deep breathing, or a cough. The patient can not lie on the left side; there is difficulty in breathing; there may be vomiting, cough, hiccough, a yellow tinge to the eye, and sometimes jaundice. This disease occasionally terminates in abscesses, which have to be opened; therefore it should come under the care of a physician.

Hob-nailed Liver, which is as fatal as cancer, is usually caused by drinking alcoholic liquor, and is one of the most common results of continued intemperance. It generally occurs in those past middle life, and recovery is not to be expected. It usually ends fatally within a year or so, and all that can be done is to lessen the suffering by narcotic remedies. A person addicted to drink, who finds his liver becoming tender or painful, with that group of symptoms which indicate either inflammation or congestion, and especially if he be past forty, must abandon liquor and seek relief promptly, if he would not perish by that painful and hopeless disorder which is known as granular or hob-nail liver.

Fatty Liver is a disease common to the moderate drinker and to drunkards; in rare instances it has been known to follow debility from other causes. It is incurable after it is fully developed.

Treatment.—Both congestion and inflammation of the liver need, first of all, to have free circulation established, for there is an obstruction somewhere that gives rise to the disease. Eilert's Daylight Liver Pills may be given in cathartic, followed by laxative, doses. Another remedy, much more unpleasant, but sometimes useful, is Epsom salts. One tea-spoonful is dissolved in half a glass of water, to which ten drops of aromatic sulphuric acid is added; this makes one dose, which should be repeated every four hours until the bowels move freely; then the medicine will be needed only three times a day. As soon as the pain and swelling of the liver have disappeared, take Happy Home Blood Purifier, in tonic doses, for a month or two.

Gall-Stones.—The gall bladder is liable to have formed within it a number of hard, round balls, resembling stones, which appear to

consist of the salts of the bile. The pain caused by their passage through the gall-duct is called "bilious colic." The cause of their formation can not always be discovered. We have seen one patient in whom it was possible to trace the cause. In this instance it was a cold which set up catarrh of the intestine at the point where the gall-duct empties into it. This produced a swelling of the membrane, which closed the orifice of the gall-duct; the bile was consequently retained until the swelling subsided; in the mean time the watery portion was taken again into the blood and carried to the skin, giving it a yellow hue, while the solid portion was rolled into little balls by the contractions of the muscles in their effort to expel the contents of the gall-bladder. About ten days after taking a severe cold he would be seized with an agonizing pain in the region of the gall-duct; the pulse became very slow and feeble, the countenance pale, a cold sweat stood upon his face and brow, there was nausea and some vomiting; the pain would increase and the prostration become alarming, when, as suddenly as the pain began, it would cease, and he would fall asleep. The stones had escaped into the intestine, and he would suffer no more for that time. He was advised to avoid taking cold, and, when he did take one, to begin treatment immediately to restore the action of the skin. Although this patient was an aged man, and was at first regarded as incurable, by strictly carrying out this advice he was relieved from this painful and dangerous malady. It can not be expected that all cases will terminate so happily, for the cause is often beyond our reach.

Treatment.—Those measures which promote health are useful, and none is of more influence over this disease than regulation of the diet. Fats and sweets should be used very sparingly; these, of course, include pastry of all kinds. During the pain, chloroform in the proportion of one drachm in one ounce of gum-arabic water, or flax-seed tea, may be given in tea-spoonful doses every ten or fifteen minutes. Another remedy which has been highly praised is composed of equal parts of sulphuric ether and oil of turpentine, mixed and well shaken; ten drops in water may be given for a dose, and repeated in fifteen minutes. After the paroxysm is relieved, Happy Home Blood Purifier and Health Tonic, with hygienic measures, will generally prevent another attack. Emetics sometimes relieve the paroxysm immediately, but nothing equals the hot bath when it can be quickly prepared.

Jaundice.—A gall-stone too large to pass through the bile duct sometimes blocks it up, and the bile being taken up again, produces

the condition known as jaundice. It is not a separate disease, but is only a sign of disordered action of the liver, or obstruction to the escape of the bile in a natural way. The skin becomes yellow, as do all the tissues, particularly the whites of the eyes. The yellow color appears first in the eyes, then the face, neck, chest, and finally the entire body is stained with it. The shades of yellowness vary from a faint tinge to a deep orange hue, and in some cases greenish, or almost black. The latter are the most dangerous, and are known as green or black jaundice. It may come on gradually, when it is preceded by headache, loss of appetite, nausea, irregular bowels, or constipation, colic, pains, languor, etc. Yellowness is the first symptom in the acute form. The urine is of a saffron color, as the disorder advances, and the excrement a light clay or putty color. Other symptoms are troublesome itching or tingling of the surface of the body, a bitter taste in the mouth, furred and yellow tongue, thirst, drowsiness, giddiness, peevishness and exhaustion. The duration of jaundice varies from a few days to several weeks. The acute form is seldom fatal; but the chronic form, that comes on slowly, is due to organic disease that is often of a dangerous character.

Treatment.—The bowels must be kept open by a mild cathartic, like Eilert's Daylight Liver Pills. The intestinal canal should be washed out once or twice daily by a large quantity of soft water, or that which has been boiled. Hot water usually answers better than cold. Articles of drink or diet which irritate or congest the liver must be avoided; such as fermented liquors, wine, hot spices, fat and rich or indigestible articles of diet. Jaundice caused by an obstructed bile-duct is relieved by warm baths.

Bright's Disease receives its name from Dr. Bright, who drew attention to the existence of this singular affection in 1827. There are many different disorders of the kidneys now grouped under this name, having, in common, albumen in the urine and dropsy. It occurs in two forms, the acute and chronic. Men are more subject to it than women. The acute form usually results from exposure to cold and wet, which checks the perspiration, or to the excessive use of alcoholic drinks. Occasionally it follows scarlet fever. It begins with chilliness, soon followed by feverishness, headache, restlessness, oppression in breathing, nausea, perhaps vomiting, pains in the back and limbs, with dropsy, which is first observed as puffiness about the eyes and face in the morning. There is frequent urination, but the urine is

scanty, heavy and loaded with albumen. A portion of it in a spoon or cup held over a lamp for a few moments will thicken and turn white, exactly as white of egg mixed with water will do when boiled. This test alone, however, does not prove that one has Bright's Disease, for there are other substances sometimes found in urine which turn it white when heated. The acute form of this disease runs its course in a few weeks, ending in recovery, death, or the chronic state. About two-thirds of the cases recover.

Treatment.—Avoid alcoholic drinks and medicines which stimulate the kidneys. Action of other excretory organs is to be stimulated to give the kidneys rest, because they are overtaxed. Profuse perspiration is desirable, and no better method of relieving the kidneys exists than the Turkish bath. In localities where this can not be had, the *vapor bath* (see page 172) makes a very good substitute. Eilert's Pills, to keep the bowels active, with liquid food, preferably milk, kumyss or buttermilk, with little or no solid food, is the best plan to bring about recovery. After the fever has disappeared and the symptoms begin to improve, tincture of iron is the best remedy to prevent the escape of albumen. It may be taken in ten drop doses, in a glass of water, three or four times a day, taking care to protect the teeth, which will be blackened by contact with even so dilute a solution as here recommended. It is better to take it through a straw or glass tube.

Chronic Bright's Disease.—This comes on so slowly and with so few symptoms that the victim frequently has no warning of the serious nature of his illness until the later stages. There is very gradual loss of strength, paleness or puffiness of the face, a frequent desire to urinate, perhaps shortness of breath; but the occurrence of dropsy is often the first thing which leads to the suspicion of Chronic Bright's Disease. A physician's counsel should immediately be sought upon discovery of symptoms which appear to be the forerunners of this dreaded disease. It is better to consult a physician needlessly, and have one's fears removed by certainty that there is no reason for them, than to live in doubt and fear until the time has passed when any permanent help is possible. Do not trust to the opinion of strangers; take counsel of a practitioner who knows you, your habits, and, if possible, your parents. He has data for an opinion of more value than you can obtain elsewhere.

Diabetes.—This is a condition in which an excess of urine is

passed. There are two forms—*diabetes insipidus*, in which there is an excessive quantity of urine without any change in its nature except that it is more dilute than usual, and *diabetes mellitus*, which contains, besides the excessive quantity, a considerable amount of grape sugar. The former may come on suddenly or slowly. The patient's attention is usually first called to it by having to get up frequently at night to empty the bladder. There is a sense of weariness, with pain in the back and considerable thirst. These symptoms may be months in developing. The system is gradually undermined when it is allowed to continue untreated, until it terminates in diabetes mellitus, in consumption or other fatal chronic complaint.

Diabetes mellitus also comes on suddenly or slowly ; generally months elapse before the patient will think it worth while to consult a physician. It comes on without an ache, or a pain, or other prominent symptom. The patient notices that he is losing flesh and strength every day, and is becoming too feeble to attend to business; at the same time he eats nearly as much as usual. He has frequent calls to pass water, and the amount is very large. He continues to grow thin and weak, until scarcely able to get about, and even when obliged to keep his room the greater part of the time, there is still no suffering. The thirst is the most troublesome feature, the patient having an almost constant desire for and drinking large quantities of fluid. Hectic fever comes on in the later stage with night-sweats. Consumption sometimes appears and carries off the patient. Again, exhausting diarrhœa sets in, which destroys him; and sometimes he suddenly becomes unconscious, and, after lingering a day or two, dies from poisoning produced by the amount of urea collected in the blood, on account of the inability of the kidneys to remove their share. A diabetic person is not only liable to consumption, but is very liable to bronchitis, chronic pneumonia, or gangrene. Boils and carbuncles are common to these patients, and sometimes complete the exhaustion and are the immediate cause of death. There is no disease in which the sufferer holds his fate in his own hands to such an extent as in diabetes. He must exercise self-control in eating if he would prolong his life. His diet must include those articles of food which are deficient in sugar and starch. He may eat fish, oysters, clams, poultry, and meat of all kinds except liver; butter, cream, cheese, eggs, greens, lettuce, cabbage, cauliflower, spinach, celery, water-cresses, onions and asparagus may form a part of his diet. The articles which he must

entirely forego are beets, parsnips, carrots, turnips, potatoes, beans, peas, rice, sago, tapioca, arrowroot, chestnuts, confectionery, and all bread, cake, puddings and pies made of wheat or rye flour, corn or oatmeal. The desire for bread may be supplied by the use of gluten bread, branbread, or almond bread. Tea and coffee, without sugar, are allowable. Acid fruits may sometimes be indulged in, but sweet apples, figs, dates and raisins must be avoided, as also beer, cider, wine and liquors. Sudden changes in temperature must be guarded against, as well as exposure to damp and cold. The body should be protected by flannel next the skin. Exercise in the open air, good ventilation, frequent baths, with dry rubbing, are excellent aids to treatment. Happy Home Blood Purifier and Health Tonic is the principal constitutional remedy required. The earliest symptom of lung complication should be met with the administration of Eilert's Extract of Tar and Wild Cherry. Electricity is an excellent constitutional tonic, assisting digestion, assimilation and excretion.

Headaches may be divided into *organic*, which are due to disease of the brain, or its covering; *bilious*, those caused by a weak stomach, unsuitable food, indigestion, lack of exercise, or inactive liver, kidneys, skin or lungs; *nervous*, when resulting from weakness or exhaustion; and *neuralgic* or *rheumatic*, from the same causes which produce similar pain in other parts of the body.

Treatment.—During the attack let the patient remain in a cool, darkened room, which is kept quiet. Ask no questions that can be avoided, and carry on no conversation within hearing of the patient; the buzzing of voices is very distressing to the sufferer. When the head is hot, cloths wrung out of cold water and laid on the forehead will give some relief, or the hair may be wet and fanned dry, which cools by evaporation. In the rheumatic or neuralgic variety, a hot pillow, and dry, hot flannel wrapped snugly about the head, leaving only space sufficient to breathe through, are very comforting. A hot hop pillow, or poppy pillow, is a favorite with some patients.

To Prevent an Attack of Headache.—All forms of headache are lessened in severity by attending to the excretions and keeping them regular and natural. This includes bathing, exercise, ventilation, freedom from dampness—especially in sleeping-rooms—a wholesome and suitably selected diet, and prompt attention to the calls of Nature to secure regular action of the excretory organs. When symptoms of a headache are already present, a cathartic dose of Eilert's Daylight

Liver Pills will prevent the attack, except it be of the *nervous* variety. This calls for better nourishment and change of employment or surroundings, if either have produced the exhaustion. Aromatic spirits of ammonia in thirty-drop doses, well diluted with water, and repeated every half hour for two or three times, is a good remedy. Sometimes compound spirits of lavender does better; it may be given in doses of thirty drops on a lump of sugar. Particular care must be exercised in the choice of food when subject to nervous headache. Fresh meat, vegetables, fruit, milk, and eggs, either raw or slightly cooked, are needed. *Organic* headache may be somewhat relieved, but not cured until the disease which gives rise to it is removed. Sometimes the following will suppress an attack, if given at the start: Dissolve two grains iodide of potash in a wine-glass of water, and sip the whole slowly, taking about ten minutes to finish the dose. *Bilious* headache requires a regulation of the habits to remove the cause, and the only medicine needed is Happy Home Blood Purifier and Health Tonic in alternative doses, continued from one to three months, or until the skin becomes clear and smooth, the excretory organs active, and the digestion perfect. A prescription which is very popular among those subject to regular attacks of headache is the following: it should be prepared by a druggist: The ingredients are—muriate of ammonia, 3 drachms; acetate morphia, 1 grain; citrate caffeine, 30 grains; aromatic spirits of ammonia, 1 drachm; elixir guarana, 4 ounces; rosewater, 4 ounces. Dose: a dessert-spoonful every ten to twelve minutes, while the pain lasts.

The vomiting attending sick headache is sometimes relieved by salt and water; again, lemon juice acts better, and the carbolic acid mixture recommended for dyspepsia is occasionally useful; when these fail, give hot water, a pint at once, to rinse out the stomach and quiet the distressing retching.

Apoplexy, or "stroke," is so called because the victim falls suddenly, as from a blow; it more frequently attacks those past middle life, and is usually due to a broken blood vessel in the brain. It is believed that those who are troubled with a rush of blood to the head, who have a red face, and are subject to spells of dizziness, are more likely to be stricken with it; but those who have never experienced these symptoms are not free from it. The patient suddenly becomes unconscious, the breathing is like snoring, the face looks full and swollen. The fit may last from two or three hours to a week, during which time

there is complete unconsciousness. The danger is somewhat in proportion to the degree of insensibility, the amount of snoring, the puffing out of the cheeks, and the difficulty of swallowing. Each succeeding attack becomes more dangerous, and a third is seldom survived. As the patient begins to come out of the fit he is found to have more or less paralysis, and the mind is somewhat injured. He improves up to a certain point, but is never again quite the same as before the attack. The impairment of mind is shown by failure in memory, childishness, irritability, impatience, and excitability.

Treatment.—A person who has a tendency to apoplexy should take measures to ward it off. He should avoid alcoholic drinks, great excitement, excessive exercise during digestion, exposure to extreme heat or cold, and everything which throws an extra amount of blood to the head. Running to catch a train is a dangerous exercise for such an one. Retiring while the stomach is full and lying on the back or right side favors an attack. The bowels should be regulated by Eilert's Daylight Liver Pills, which ought to be taken in cathartic doses whenever there is dizziness, rush of blood to the head, and a feeling of fullness or oppression in it.

During the attack the room should be kept cool and airy, the head should be raised the body being propped up into a partially sitting posture, and bathed with cool water. Ice may be applied, but when it is not at hand, fanning the head while wet will cool it rapidly. Mustard plasters may be applied to the calves of the legs and soles of the feet. Frequently the fit has been preceded by constipation, and an overloaded colon will obstruct the circulation in the abdomen; this, of course, destroys the equilibrium of the circulation in other parts. Under these circumstances an injection, as recommended for constipation, should be given as soon as possible. Doctors sometimes find it necessary to give a powerful physic, like a drop or two of croton oil mixed with sugar and placed upon the tongue; but it is better to seek medical advice before giving this.

The treatment after recovery from the fit is the same as for paralysis.

Paralysis, also called palsy, or, by some, "numb palsy," is manifested by loss of motion, or feeling, or both, in one or more parts of the body. The cause may be disease of the brain, of the spinal cord, or of the nerves. The most dangerous form is that which follows an attack of apoplexy, and affects both halves of the body alike. Gener-

ally one-half only is disabled. Medical advice should be had when any part of the body is paralyzed; it is unsafe to use any kind of home treatment, except under medical advice, for at least one month after the attack, and whatever is done then should be commenced very carefully lest another shock follow.

The best medicine to restore the nutrition of the parts, which is interfered with by want of exercise following the loss of power, is Happy Home Blood Purifier and Health Tonic. It not only cleanses the blood, but acts as a direct stimulant to the nervous system. To restore the strength of the affected muscles and prevent wasting, electricity is a valuable agent. For domestic treatment the best instrument we have examined is the Family Battery manufactured by the McIntosh Galvanic and Faradic Battery Company, of Chicago. There is furnished with it a little pamphlet of instruction which clearly explains not only the correct method of applying electricity, but points out how to avoid its dangers.

Convulsions, or "fits," consist of a sudden contraction of various muscles, or alternate contraction and relaxation, the patient usually being unconscious at the time. They are most frequent among children under ten years of age, and are produced by several causes, of which indigestion or errors in diet, worms, teething, and colds are the most common.

Treatment.—During the attack, the hot bath and an emetic are the most efficient measures. The best emetic for the purpose is ipecac. To prepare the emetic, take a heaping tea-spoonful of the powdered ipecac, pour on it a tea-cupful of boiling water, let it stand a few minutes, strain and give a tea-spoonful of the liquid every five minutes until vomiting begins. If the child can not swallow, mix one tea-spoonful of the powdered ipecac with half a pint of hot water and inject into the rectum. Prevent its escape for a few minutes, and it will produce vomiting. Lobelia tincture, in doses of ten drops, mixed with sugar and water, may be repeated every ten minutes until vomiting begins; it may also be used as an injection when it can not be swallowed, in about twice the strength that it would be given by mouth.

To Prevent Fits.—Regulate the diet; feed mostly on bread and milk, tender meat and vegetables. More important even than the kind of food is the regularity of eating. Let a child who has ever had a fit, or symptoms of one, eat nothing at all, not an apple, a cracker, a cookie or a bit of candy or sugar between meals; but give it food every

three hours during the day, provided it is hungry enough to eat plain, substantial articles so often, but do not tempt the appetite with cakes, pies or other nick-nacks. Worms must be removed when present. An excellent and thorough worm medicine is well known and popular in families everywhere—we refer to Dr. Jaques' German Worm Cakes.

The irritation of teething can be subdued by Dr. Winchell's Teething Syrup, a pleasant remedy, whose merits are not half appreciated by the public. It should be given whenever the child is seen to twitch, to draw its face to one side in sleep, to bend its thumb tightly against the palm of the hand—all of which are signs of impending convulsions.

Epilepsy.—This disease attacks persons suddenly, making them fall, hence the common name, "falling sickness." The fits usually last from five to twenty minutes, although they have been known to continue much longer. The patient may appear to be in good health, when suddenly, without any warning, he utters a piercing scream, or a suppressed groan, and falls senseless, foaming at the mouth, with the face and body violently convulsed. There is hardly any sickness which is so alarming to the spectator who is not familiar with epilepsy, as a fit of this kind. The dark and distorted countenance, the noisy breathing, the foam thrown from the mouth, which is often bloody, in consequence of biting the tongue as the jaws are violently drawn from side to side, the jerking of the muscles and the rolling of the eyes, give the patient the appearance of being in extreme danger; yet it is rare for one to die in the fit. The paroxysm is followed by sleep, when he awakes unconscious of what has occurred, unless his tongue has been bitten, in which case the soreness, which remains for sometime, makes it known to him.

Although an epileptic seizure usually comes on suddenly, there are sometimes warnings of its approach; these may be headache, dizziness, an irritable temper, noises in the ears, or floating specks before the eyes; many persons also have a peculiar warning, called an "aura," just before the attack begins; it is sometimes a creeping or blowing sensation, like a current of air blowing upon one spot, or like a stream of water falling upon it, or a slight convulsive tremor or shudder, beginning in one hand or foot, nape of the neck, or almost anywhere, which extends to the head, when the patient loses his senses. Several fits may follow in succession, and he only partially regains

consciousness when he falls into the deep sleep which always follows, and from which he awakens exhausted and with some mental confusion and headache. The fits occur at irregular intervals; in some cases there are months between the attacks; in the worst cases there are from one to many fits every day. This disease does not destroy life, or not for a long time, but it impairs the memory and injures the mind; when it begins in infancy the child becomes idiotic by the time it is grown up; beginning in adults, it usually terminates in mental derangement or insanity. The only immediate danger to epileptics is from injuries received in falling when the fit seizes them. They should never remain near an open fire, or close to a hot stove, or stand where they are liable to fall down stairs, or upon moving machinery. Great distress and inconvenience is produced by the bitten tongue; by-standers should place a piece of rubber, cork, soft wood, or a folded handkerchief between the teeth to protect the tongue, taking care that the object does not slip into the throat. It is not known what the peculiar condition of the system is which makes a person the victim of this terrible disease. Sudden fright, blows upon the head, intestinal worms, intemperance, indigestion and bad habits, are some of the causes which give rise to a fit in those predisposed to it.

Treatment.—During the attack, loosen the clothing, give plenty of fresh air, protect the tongue and—wait. Do not attempt to give any medicine. There are two medicines which, in some cases, seem to cut short, or altogether prevent, an epileptic attack, when taken at the instant the “aura” is felt; they are, of course, useless to those who have no warning. One of these is nitrite of amyl; it is put up in tiny glass capsules, one of which is crushed in the hand and the medicine inhaled. The other is tincture of nitro-glycerine, one drop of which is placed on the tongue. One succeeds when the other fails, in some cases, but which is the better of the two must be learned by trial. *Never take both for the same attack.* These are very powerful chemicals, and should never be carelessly handled, nor left in the way of children; neither should a larger dose be taken than here described. In the intervals between attacks the patient should carefully attend to his personal habits, keeping the excretory organs active and avoiding excesses of all kinds. Regularity in eating, sleeping and exercise is essential; a plain, easily digested diet, avoidance of alcoholic liquors and tobacco, and freedom from excitement are required. Considerable self-denial is necessary; but such patients must understand that it

is only at that price that they can hope for a cure and a preservation of their mental powers.

The *bromides* permanently cure many cases of epilepsy; among those which may be employed are bromides of potash, ammonia, soda and camphor. The doses average ten grains, repeated from three to four times a day, and, in severe cases, oftener. As one form soon disagrees with the stomach, it is better to take one at a time, and changing to another when it can no longer be borne. Bromide of potash is the one that should be the chief remedy, only taking one of the others when it becomes necessary to change. Happy Home Blood Purifier and Health Tonic is the remedy for keeping the digestive and excretory organs active. In childhood, worms frequently complicate the case; their removal, then, becomes of the first importance. For this purpose Dr. Jaques' German Worm Cakes are demanded.

Neuralgia.—This word means "a pain in a nerve." The disorder to which the name *Neuralgia* is given consists of violent pain, coming on at intervals, varying from a few seconds to a day or more. It occurs on one side of the body only at once. Anything which impairs the health and reduces the strength may give rise to neuralgia upon exposure to cold or damp. Certain blood poisons, malaria, gout, or the pressure of a tumor upon a nerve, may cause neuralgia; lead and mercury in the system are sometimes the originators of "nerve pain." This pain is acute, shooting or darting; it comes on suddenly, and ceases just as suddenly. *Tic douloureux* is a neuralgia which affects the nerves of the face. *Sciatica* is a pain located in the back of the thigh, the knee, the front, back and outside of the leg, or the foot. Neuralgia of the heart is called *angina pectoris*. There are other names for it, according as it is located, in the stomach, liver, abdomen, etc.; but the nature of the pain itself does not differ with its location; moreover, it is apt to dart about from one part to another.

Treatment.—The greatest danger attendant upon neuralgia is that the sufferer will acquire the habit of resorting to narcotics. Many opium-eaters became slaves to the drug through first taking it for neuralgia. It is the same with the victims of chloral, the bromides, and all other of the quieting drugs which enslave. The cause should be sought and removed, after which the strength of the system must be restored by tonics, nourishing diet and out-door exercise.

The pain is frequently relieved by hot applications; the heat may be moist or dry, as proves most comforting. A good way to keep up

a moist heat with little trouble is to use a hot soap-stone wrapped in a cloth wet in warm water; it may be sprinkled with hot water as it dries. A brick does very well in the absence of a soap-stone. A hot hop pillow or bag of poppies frequently gives great relief in neuralgia of the face. Most forms of neuralgia are relieved more promptly by electricity than by opium or any of its substitutes. The McIntosh Family Battery does excellent service in these cases. The time to cure the disease is after the acute attack has passed off. Happy Home Blood Purifier and Health Tonic, alternated with quinine, when malaria is suspected, and electricity, will cure the majority of cases. Quinine will answer a better purpose taken in small doses and for a longer time than usual. One grain, repeated three times a day (at meal-time, for convenience in remembering), continued for fourteen days, omitted for seven days, and repeated for another period of fourteen days, will prove more effectual in neuralgia than larger doses taken for a few days only.

Rheumatism.—This is one of the most common complaints that comes to the notice of the physician, and it is almost always self-inflicted—that is, it is due to wrong habits; and, until these are corrected, the patient will continue to have attacks of the disease. It occurs in two forms, acute and chronic.

Acute Articular Rheumatism is usually caused by exposure to cold or dampness, while the body is heated or fatigued; but such exposure will not produce this disease unless the system is already in an unhealthy condition. The symptoms are fever, a profuse, sour-smelling, sweat, and inflammation of one or more joints, with pain, tenderness, great heat, swelling and redness of the skin. The fever is preceded by chilliness and shivering, followed by restlessness, and at the end of from twenty-four to thirty-six hours, by stiffness, with aching pain in the limbs or joints. The pain increases and the swelling appears, which is most apparent in the knee, wrist, elbow, ankle, and the smaller joints of the hands and feet. The pain becomes so intense that the slightest movement of the affected parts is attended with excruciating suffering, and the patient is perfectly helpless, keeping in one position as long as possible. Rheumatism moves from one part to another, but the most serious change is when it affects the membranes of the heart. The attack lasts about three weeks, under the best treatment, before convalescence begins, and sometimes much longer. It often passes at last into the chronic form, producing permanent changes in the affected joints.

Chronic Rheumatism.—This generally comes on gradually, when not the result of the acute form, and is common among old people. There may be, at first, very slight disturbance; but the pain slowly increases, until there is constant, wearying pain, which destroys the comfort during the day, and prevents restful sleep at night. Rheumatism started by exposure to damp, cold, or draughts, is relieved by warmth; that due to a derangement of the digestive organs and secretions, to breathing bad air, or to a poison in the blood, is aggravated by warmth.

Treatment—Any treatment which is successful in either acute or chronic rheumatism requires time, patience and common sense. The skin must be protected from chill—this is of the first importance; therefore, at all seasons, the patient suffering from this painful disorder ought to be enveloped in flannel from head to foot, and in cold weather he should sleep between flannel sheets. The bowels may be regulated by Eilert's Daylight Liver Pills. Bicarbonate of soda, the same that is used with sour milk in cooking, is one of our best remedies, when the breath and perspiration have a sour odor and the tongue has a white coat, like a layer of paste. It may be given in doses of ten grains dissolved in a wine-glassful of water, repeated every one or two hours, according to the severity of the case, until the tongue begins to clean; then follow by Happy Home Blood Purifier and Health Tonic, given four times a day until fully restored. Should the tongue have a bright-red or purplish appearance, without the acid odor of the body, tincture of iron is called for in the place of the bi-carbonate of soda. As the tongue resumes its natural color, give the same remedy as in the other case. When the joints are very painful, the patient will be greatly relieved by washing the skin with hot water containing as much bi-carbonate of soda as it will dissolve, and afterward brushing over it Uncle Sam's Nerve and Bone Liniment. The joint should then be incased in a layer of carded wool (if this can not be had, substitute cotton batting or white wadding), and bandage as shown in the illustrations. (See Figs. 21 and 24.)

The diet should be of the plainest description, and mostly vegetable. Fresh bread, hot cakes, mince pies, greasy food of any kind, whether as soup or roast, must not be indulged in by rheumatic patients. Filtered soft water is one of the best remedies known for chronic rheumatism. It may be taken hot or cold, as preferred, but it is better not to have it merely warm. A pint is not too much for a dose, and should be taken about half an hour before breakfast.

Heart Disease.—There are two classes of disorders which affect the heart: the one is called functional, because there is nothing wrong with the heart itself—the nerves which control it produce the symptoms which excite alarm; the other class includes those affections accompanied by some change in the heart, and are comparatively rare. Among functional disorders, *palpitation* is the most common. It may be produced by excitement, by over-exertion, by indigestion, or by excessive fatigue. Prevention of an attack, by removing the cause, is the preferable way to treat it. Obstructions to the circulation in any part of the body may react injuriously upon the heart, not only exciting palpitation, but damaging the valves or walls of that organ.

Neuralgia of the heart is another functional disease, and causes intense suffering. The patient for a day or two complains of a dull aching in the region of the heart, with occasional sharp, piercing pains, which last but a moment. When fully developed, there is a most acute, cutting pain, passing from the left nipple backward to the spine, frequently running up the neck, down the left arm, and to other organs. The paroxysms of pain come on suddenly, lasting from a few minutes to an hour or more. The cause is such as produces neuralgia in other parts.

Rheumatism of the heart occurs when the disease moves from other localities. *Inflammation* of the heart or its covering, *enlargement* of heart, *disease of the valves*, are all preceded for some time by symptoms which should warn the sufferer to seek medical advice. Nothing is more common than to meet with patients who fear they have heart disease, but it is a rare circumstance to meet with one who actually has disease of the heart tissue or valves. Functional disturbances, however, when neglected and allowed to continue a long time, have been known to produce organic disease. The distress of mind occasioned by the feeling that one has a disease which is likely to terminate life without a moment's warning saps the energy, and unfits one for business. We recollect reading, not long since, of a man at a seaside resort, who saw a lady struggling in the water, in danger of drowning. The spectators were too frightened to assist her; at length this man exclaimed, "I can not see her drown; it is certain death to me, but I will try to save her," and he plunged in and swam to her rescue. In her struggles she nearly drew him under water, and it was by great exertion that he was enabled to keep her head above water until they could be rescued. As they reached the shore, and

the crowd closed around them and began to praise him, he exclaimed, "Don't praise me—this experience is worth thousands to me! I was told I had heart disease, and that any sudden exertion would kill me. I have proven that it is not true, and I have a new lease of life." It is customary to announce in the newspapers, whenever a person dies suddenly, that heart disease is the cause. Any coroner can tell you that this is rarely true. The heart is made to last a life-time, and it is the last organ to give out, unless there exist exceptional causes, based upon a disregard of the simplest laws of health. Whenever a patient has the idea that the heart is becoming disabled, it is better, for many reasons, to go to a doctor noted for good judgment, and obtain his opinion. Do not trust this matter to irresponsible strangers, nor to a young physician just beginning to practice; select some one you know, and have known long enough to be certain that he is intelligent and reliable. It is worth more than it will cost, to know positively that you have no reason to fear, and if there should prove to be something wrong, you will be able to have more done to retard the advance of the disease than is possible at a later stage.

Treatment.—Palpitation of the heart may be quickly relieved, as a rule, by one of the following medicines: Select the one that can be made ready first.

1. Hoffmann's Anodyne, half a tea-spoonful in water; repeat every ten to fifteen minutes.

2. Compound spirits of lavender; one tea-spoonful in water.

3. Peppermint tea, prepared in this way: Mix one tea-spoonful of the essence or one drop of the oil with a little sugar and a pinch of bi-carbonate of soda in a tea-cup, rubbing them well together; then fill up the cup with boiling water, and drink as hot as it can be swallowed.

Apply hot cloths over the spine from the neck to the lowest part of the shoulder-blades; a mustard paste may also be placed over the heart. The most important part of the treatment is to keep the patient quiet and free from excitement, and to this end persuade every one to leave the room except the nurse and such assistants as are actually needed. Neuralgia of the heart is sometimes relieved by the same measures. Severe and long-continued pain will often yield to ipecac given in doses to produce nausea.

A hop poultice, or one made of poppies, laid over the heart gives comfort. A substitute for these is a flaxseed poultice covered with

cheese-cloth, on which is poured a fluid drachm or a small tea-spoonful of laudanum. A patient who has once had neuralgia or rheumatism leave other parts and affect the heart, on a recurrence of pain in other less dangerous parts, should avoid these and all other applications that are liable to move the disease from its location. A physician should be immediately summoned to direct the treatment. After the attack has passed by, and the patient is restored to usual health, attention should be directed towards an improvement in excretion. Exercise in the open air, a plain, nutritious diet, correct and regular habits, together with daily doses of Happy Home Blood Purifier and Health Tonic are the best measures to secure future immunity from these and all other functional disorders of the heart.

Dropsy.—This disease may be divided into *active* and *passive* forms. The former usually follows fevers or inflammations, or appears during their progress. It is very frequent after scarlet fever, and may result from arrested excretions of skin and kidneys. The skin will be dry and harsh, the urine scanty and dark colored, the bowels constipated, the tongue coated with loss of appetite and headache. The fluid may accumulate in the cellular tissue, or within the cavities of the sacs inclosing the heart, or lungs, or intestines.

Passive dropsy comes on after prolonged debility, during which the blood has become of poor quality and the tissues lax, permitting the serum or watery portion of the blood to pass through them more readily than usual. Great loss of blood from any cause, exhaustive diarrhoea, or any profuse discharge which acts as a drain upon the blood, impairs its quality, or thins it, and tends to bring on dropsy. Unwholesome diet, and that which is of poor quality and not sufficiently varied, makes thin, watery blood. Dropsies among the very poor are often due to such diet. Disease of the heart which interferes with the circulation, after it has existed a long time, may give rise to dropsy. It usually comes on slowly, making its first appearance as a puffiness of the face and hands, most noticeable in the morning, and swelling of the feet, which is greatest at night. Water also collects in the chest and abdomen. These symptoms alone do not mean that the heart is diseased, for inaction of the kidneys produces the same set of symptoms. It is only when the dropsical swellings have been preceded by palpitations, pain and oppression in the region of the heart on taking exercise, and other unmistakable signs of heart disease that we are safe in concluding that the dropsy is dependent upon this condition. Dropsy not

unfrequently originates in disease of the liver, the stomach and the spleen. Dropsy following protracted cases of fever and ague is almost invariably due to disease of liver or spleen. The most troublesome cases of dropsy met with are those associated with dyspepsia. It is obvious, then, that dropsy may be properly regarded as a symptom rather than an independent disease, and the condition upon which it depends must first be treated before we can hope to permanently remove the accumulations of fluid.

Treatment.—Seek for the cause, and give the remedies recommended for it, whatever it may be. The bowels must be unloaded and kept slightly relaxed. Eilert's Daylight Liver Pills in cathartic, followed by laxative, doses keep the intestinal canal in a favorable condition for the removal of all obstructions to the circulation. After the bowels are thoroughly cleared out—not before—the action of the kidneys may be stimulated. Bathe the back over the kidneys with Uncle Sam's Liniment, and apply over the surface hot flannel. Give internally one of the following teas: Take one-half ounce of broom (*scoparius*) tops, and one pint of soft water; boil down to half a pint. Dose, one ounce every three hours. The fluid extract of broom may be given in half-dram doses, when the tops can not be had. A tea made from water-melons seeds is sometimes of service; another which can be recommended is made from parched flaxseed. Some patients will improve on one, others on another remedy; therefore, if one fails to do any good after trying it twenty-four hours, use another. The following is excellent, but very disagreeable to the taste: Take acetate of potash one-half ounce, sweet spirits of nitre and tincture of juniper, of each one fluid ounce; water, two fluid ounces. Mix. Give one teaspoonful every two or three hours. A good tonic remedy, like Happy Home Blood Purifier, should be given after the swelling is removed, provided it be suitable for the disorder which causes the dropsy. Nutritious food, aids to digestion, pure air and out-door exercise, according to the strength, are valuable measures, and ought not to be neglected.

Scrofula (King's Evil).—This disease is found in all countries and among all classes of people. It shows itself under many different forms, and it is extremely difficult to give any description that will convey a clear idea of its varying symptoms, or enable the inexperienced to recognize it. There appears to be some deficiency in the blood of scrofulous patients, but just what this is no one has been

able to discover. The disease manifests itself by feeble vitality, and all the processes of life are carried on slowly and defectively. The glands, especially those about the neck and under the arms, are subject to enlargement. They ulcerate slowly and are very difficult to cure, sometimes continuing to discharge pus for months. Scrofulous children often have defective bones, and are more liable than others to spinal and hip disease. They need special treatment from infancy and childhood to overcome the constitutional disorder.

Treatment.—Eilert's Daylight Liver Pills and Happy Home Blood Purifier are two important remedies to be employed to promote excretion and stimulate the nervous and circulatory system; in other words, to increase the activity of the nutrient and absorbent vessels upon which body-building depends. Uncle Sam's Liniment is an excellent application to enlarged and ulcerating glands.

Most important of all measures is a well-ventilated sleeping apartment and a separate bed. A scrofulous child should not be placed in a trundle bed in the bed-room with its parents. It ought to begin at a very early age to play out of doors and in the sun, when not too hot. It should have regular meals and be persuaded to eat fat in some form, either as butter, cream or good bacon. Usually these little patients refuse all fatty food—then cod-liver oil is called for. Molasses, syrup and honey are the best substitute for oils or fat, but they do not quite answer the purpose. Do not be in a hurry to send such a child to school. The foul air of the school-room, together with the exposure to colds and enforced quiet, are sufficient to counteract the best home management. It is more important in early life to secure a vigorous constitution than an education, for the latter can be obtained at any age, while the foundation for good health must be laid in childhood. Medicines alone can accomplish little unless aided by baths, exercise, ventilation and a plentiful supply of nourishing food, varied in character to furnish all the elements needed in body-building.

Rickets is a disorder of the general system which leads to softening of the bones. It is especially a disease of infancy, commonly appearing between the third and fourth months; occasionally the child is affected with it at birth, and again, it does not make its appearance until childhood. It is more frequently seen among the poor who suffer from deficient nourishment, and among those who live in damp, shaded places. The symptoms develop slowly, and are not at

first recognized. The child appears unusually quiet, does not wish to move or be moved, suffers from pain in the bones during the night, also when handled, crying out whenever it is touched or moved. There is some fever, followed by sweating, pale or sallow face, imperfect digestion, diarrhoea and gradual loss of flesh. The bones become unable to support the parts dependent upon them and bend out of shape; the joints enlarge, while the portion between them remains very slender. The teeth appear late and soon begin to fall out; the head enlarges, and the opening on the top is very slow in closing. There are all degrees of the disease, from that which slightly changes the form or curves the limbs to the most extreme deformity, including hunchback. It can be said with certainty that a child has rickets only when the limbs become painful and begin to curve; when the teeth are very late in coming and imperfect; when the joints are enlarged; when the top of the skull remains open. Such patients have small mental capacity, deficient muscular force, and are diminutive in size compared with other members of the family to which they belong.

Treatment.—The general measures recommended for scrofula are equally valuable in rickets. The painful joints and bones may be bathed with Uncle Sam's Nerve and Bone Liniment; the restlessness and pain may be quieted by Dr. Winchell's Teething Syrup. Certain elements, supposed to be deficient in the blood, are supplied by the acid phosphates, hypophosphite of lime, and iron. The diet is of more importance than anything else, except open air exercise. Fresh eggs, fresh fish, vegetables and milk are the chief articles of food required, but a plentiful supply of these is not all that is necessary; while the tissues of the body can not be woven smooth and strong without them, they must undergo preparation before they are ready to be used in the weaving; in other words, digestion must be specially looked after, for it is always weak and frequently defective in those suffering from rickets. Happy Home Blood Purifier is the best corrective of imperfect digestion.

Hip Disease.—This malady usually affects those under fifteen years of age, occasionally those who are older. Blows, sprains, and sitting on cold stones or damp ground, are some of the causes which give rise to it. It begins by an apparent increase in the length of the limb, while the toes turn outward more than before; there is slight pain in the knee, which is usually bent, and the child walks with a limping or shuffling gait, treading only on the toes of the affected limb. It is first sup-

posed by the parents that the trouble is in the knee; but, on examining the hip-joint, it will be found that pressing upon the head of the thigh-bone gives pain. At this time the patient should be placed under the care of a competent surgeon; for the only treatment which can be of any service in lessening the amount of injury that will follow, is early surgical treatment. Happy Home Blood Purifier and Health Tonic, given for two or three months, to improve the appetite and digestion, with nutritious food, of which milk should form a large part, will greatly assist the measures which the surgeon will recommend.

Teething.—Healthy nursing infants, and those that are given no other food than milk, or some of the materials specially prepared as substitutes for milk, seldom have any difficulty in cutting their teeth. The nervous system of a child is necessarily very active, because it not only directs the nutrition, but must prepare the means of growth and development; irritation which will produce but little effect upon a grown person will prove very exciting to a child. It is customary to attribute almost every illness of infancy to the teeth; there never was a greater mistake, or one fraught with more danger to the young. The mother, assured by her friends that she must expect all kinds of infantile ailments during this period, accepts them as inevitable, instead of seeking the source of the irritation, and removing it. Nine times out of ten the disorders of teething are due to dyspepsia. The child is too often fed without any system; therefore, at the risk of being considered tedious, and, perhaps, charged with repetition, we again enumerate the conditions which will enable little ones blessed with a healthy constitution to pass through the dreaded ordeal of teething with the least possible inconvenience.

1. *Regularity in feeding* should be the rule, from the time the infant begins to eat. Nursing it once in three hours, for at least three months, and after that every four hours. Bottle-fed babies need the same intervals of rest between meals.

2. *Food adapted to the incompletely developed digestive organs.* Mother's milk, or, rather, the milk of healthy mothers, is the only diet needed until the teeth begin to appear. Those who are nursing infants ought to eat nourishing, hearty food, to make rich and wholesome milk. Beer and liquors of any kind are believed by a great many women to be actually necessary "to make milk." The milk from a still-fed cow is justly regarded as unfit for infants' food; and

what reason have we to believe the milk from a beer-drinking woman is any better for the young?

It is a pity that so many excellent people are so badly taught. If you will read over the chapter describing the elements of food, you will understand what is needed to make good milk.

3. *The Milk Must be Free from Injurious Elements.*—Nursing women ought to be careful in the selection of their diet. Articles which disagree with their stomach will injure the milk, often making it acid; onions, boiled cabbage, and some other “strong-tasting” vegetables give an unpleasant flavor to it; excitement, such as violent anger, grief, fear, etc., under some circumstances, make milk actually poisonous. Bottle-fed babies run the most risk from unclean nursing-bottles. The soft rubber tubing usually employed absorbs the gases formed in milk as it is turning sour, and after a short time becomes filled not only with them, but with particles of milk, in which bacteria grow freely. This is a frequent and often unsuspected cause of sore mouth. Simple washing or soaking in water can not cleanse it. Bicarbonate of soda and good soap in the water in which it is washed is much better than water alone; but nursing bottles containing rubber tubing ought to be abolished. There is now in the market a style of bottle having a screw-cap to attach a rubber nipple to the neck of the bottle; this may be removed for cleaning, and is in every way more desirable than the old style. New rubber nipples should be provided frequently. The milk from cows supplied with impure drinking water, and those fed on swill and garbage is unfit for infants.

4 Nursing *infants*, as well as bottle-fed babies, frequently need a drink of *water*. Fretfulness is often quieted immediately by a cool drink, and little ones suffer more than is generally suspected, in consequence of the almost universal belief that they need nothing but milk to quench thirst.

5. *Baths for cleanliness* are sufficient for cold weather. By this we mean that the whole body need be bathed only when it is dirty. The parts that are soiled by the excretions should be washed each time before applying a clean diaper. Use clean, warm, soft water and a soft cloth; wipe perfectly dry and dust with powder, corn-starch, etc. Chafing comes from leaving the skin moist; when very troublesome, Uncle Sam’s Nerve and Bone Liniment, used sparingly, is an excellent emollient to soothe inflammation and heal the skin. During hot weather an infant needs frequent baths, to keep it cool; it will often

quiet a fretful, restless child, and give it a comfortable night's rest to bathe it in tepid water at bed-time. Heat eruption, "prickly heat" on the skin is very distressing, because it is accompanied by a dry, stinging heat, with intense itching; one table-spoonful of vinegar in one pint of water used as a bath relieves the itching; when the child is very fretful from this cause, remove the clothing, and rub the skin with the dry hand over the whole surface covered by the rash.

6. *Infants Need Clean Garments and Bedding.*—It is wonderful how strongly the germ of life is implanted in their frail, helpless, little bodies. We are impressed anew with this fact when we see them not only living, but apparently vigorous, although placed in the most filthy surroundings. Many people who would be very indignant at any hint that they are lacking in cleanliness, think nothing of allowing a delicate, sensitive child to sleep in a crib with bedding and covering soiled with urine, and smelling most abominably. The diapers, too, when wet with urine, are hung by the stove to dry without rinsing in water; the result is, that they are not only stiff and harsh, but injurious to the child—for we repeat again *whatever is thrown off from the body is a poison to it* until it has undergone transformation in the laboratory of Nature. This unsuspected source of poisoning causes many a fever of a malarial type.

7. *Infants Need Sleep and Quiet.*—It is a mistake to handle them as much as is customary among Americans. After eating they naturally sleep when they are well; when prevented from doing this by doting parents, or by thoughtless older children, it reacts injuriously upon their nervous system. Mothers who make martyrs of themselves by training their little ones to expect constant attention injure them, and wear themselves out uselessly. Violent rocking injures the baby, who is really better off in a bed that can not be rocked or rolled about.

8. *Sleeping Infants Ought to be Laid out of the Way of Drafts.*—Never set the cradle between two doors that are liable to be opened while baby is asleep; neither should it be placed in front of an open window. Many serious colds originate from a neglect of this precaution.

9. *Teething Children Need Something Hard to Bite.*—As soon as the gum feels hard and swollen, showing that the tooth is pushing outward, the child should be given a piece of ivory, or a hard polished stick to bite on; a ring will not answer except for the front teeth, and

soft rubber is unfit for the purpose. The object must be too large to swallow, and of a shape to fit the gum; biting on a hard substance helps the tooth through, and relieves some of the irritation. Teething, divested of all the accompanying evils alluded to above, becomes a trifling affair compared with the grave troubles which beset the little unfortunates who have not the benefit of suitable hygienic care. We have been hitherto considering the case of those originally possessed of sound constitutions. There are multitudes of little ones born into the world, who, for one reason and another, are of defective organization. Drink, vice, unsanitary homes and bad habits are responsible for it. Good care and the best of nourishment are needed to overcome, so far as may be done, their natural defects. To this class teething is full of peril. Their hold upon life is frail at best; and any irritation, however slight, produces a serious impression upon them. Naturally strong, healthy infants will often survive the most extreme neglect and bad management; but the class of which we are now speaking must be guarded with all the care we have suggested, or their little lives will go out some time during the first two years of their struggle for existence.

Treatment.—The disorders of teething include nearly every complaint common to the young. The remedies must be selected according to the special conditions present in each case. Sore mouth, sour stomach, canker, and diarrhoea are relieved by Dr. Winchell's Teething Syrup. It will save much anxiety, to keep a bottle of this incomparable children's medicine in the house, because it is beneficial in nearly all the slight ailments which give rise to fretfulness, restlessness and pain. Catnip tea quiets the nerves, and helps a fretful child to sleep. A little patient who wants to be carried all the time, and has one cheek red and the other pale, will be helped by chamomile tea; colic pain needs peppermint; scanty, burning urine calls for a tea made from water-melon seeds or spearmint. Herb teas for children ought not to be made too strong; they should be pleasant to the taste, and sweetened with loaf-sugar or honey; in cases where the stomach becomes sour very easily, these teas agree better when sweetened with glycerine.

Diseases of the Skin.—The skin is affected with a great variety of disorders, some of which give rise to no danger, while others are capable of destroying life. Some are attended by fever, and run a rapid course; others are chronic, and yield but slowly to any treatment; some are contagious, others are not. Some are propagated by con-

tact or from the effluvia of the sick, of which scarlet fever and small-pox are examples; others from want of cleanliness. Disease of the blood, arrest of secretion, and parasites all produce eruptions upon the skin. The principal ones may be included in eight classes:

1. *Papule*, or pimples—little elevations of the cuticle of red color, and not containing fluid. Many who eat freely of buckwheat cakes, hickory-nuts, or 'greasy food have their faces disfigured by pimples. Some toilet soaps irritate the skin and produce these eruptions.

Treatment.—Use Happy Home Blood Purifier, bathe the entire body frequently; bathe the face each night with this lotion, after washing off the dust. Mix half a drachm of powdered alum with four ounces of rose water. When the alum is dissolved it is ready for use. Do not wash it off, but carefully dry the face with a soft cloth, and afterward anoint it with Uncle Sam's Nerve and Bone Liniment. This will make the skin soft and fair.

2. *Squamæ*, or scales. These are small, hard, thickened, whitish patches of unhealthy cuticle. They are easily removed, but form again. Dandruff is an example of this, but it is not uncommon to see a scaly eruption on other parts of the body.

Treatment.—The surface affected with a scaly eruption does not permit local applications to pass through to the diseased surface, unless the scales are first removed. This is done in various ways, according to the location of the eruption. Glycerine will soften the scales, after which they may be removed with castile soap and water. To heal the surface, there is nothing better than Uncle Sam's Nerve and Bone Liniment. After the preliminary washing do not apply soap and water again, but cleanse the surface with the Liniment, using a piece of lint or absorbent cotton to avoid rubbing off the fibrine thrown out to form new skin.

3. *Exanthemata*, or rashes, superficial red patches, varying in size and intensity, and disappearing under the pressure of the finger; erysipelas, scarlet-fever rash and measles are examples. The most of the disorders belonging to this class we have described separately. There are a few forms which are unaccompanied by fever, and arise from some irritation of the digestive organs that may be treated like *erythema*. This appears in raised red patches, of different sizes, on the face, the chest or the limbs. The redness disappears on pressure, but returns as soon as pressure is removed. It lasts from a few hours

to several weeks, disappearing only when the cause that gave rise to it is removed.

Treatment.—Give Eilert's Daylight Liver Pills to regulate the bowels, which are nearly always disordered; follow it by Happy Home Blood Purifier, and bathe the spots with Uncle Sam's Bone and Nerve Liniment. Regulate the diet and eat at regular intervals.

4. *Bullæ*, also called blebs, are small blisters. A form of erysipelas belongs to this class, but this eruption is usually of less consequence than erysipelas. The latter has been described in another place. Ordinary bullæ may be treated as described for erythema.

5. *Pustules*, small elevations of the cuticle, containing a fluid, usually clear and colorless at first, but becoming afterward opaque and yellowish. The small-pox eruption begins in the form of pustules.

Treatment.—Pustules, accompanied by fever, need special management, according to the disorder which gives rise to them. When unaccompanied by fever they indicate impure blood or nervous irritation. The cause must be discovered, and removed before the eruption will improve. It may be a poorly ventilated sleeping-room; the presence of gas from sewers or drains; or, what is equally injurious, a vessel of urine, which fills the air of the room with its emanations. Late hours and habits, which irritate and weaken the nerves, are very frequently revealed by the appearance of a pustular eruption upon the face. The diet may be at fault; it may not be sufficiently varied, or it may contain too large a proportion of starch and sweets. The question as to whether a given food is digestible or not, can not be determined from diet lists; it depends upon the stomach that is to do the work. There are peculiarities of constitution, which we can not account for, that makes "one man's meat another man's poison." We have seen persons who were troubled with belching acid gases from the stomach, with weight and uneasiness from a plain diet of bread, meat and potatoes, who could take a quantity of rich fruit cake, ordinarily regarded as very indigestible, without any symptoms of indigestion. We have also known a strong, healthy person who could not eat eggs or anything containing them without a violent attack of illness following; the same thing occurred when food was eaten away from home, and without a suspicion on the part of the eater that it contained eggs. Selection of diet, then, must depend largely upon individual judgment. In the case of a pustular eruption a change in diet must be made, and vege-

tables be eaten when meat has been the principal food, or *vice versa*. Happy Home Blood Purifier will remove the morbid elements from the blood. As soon as pus forms and the top of the pustule looks white, it ought to be opened to prevent a scar.

6. *Vesicles*.—These are small elevations containing a fluid that is at first clear and watery, but later becomes pearly white; salt-rheum, or eczema, is usually of this form on its first appearance. Some of the vesicular eruptions are temporary, and will disappear without treatment. This is true when caused by slight disturbance of digestion, or from eating food that disagrees. Shell-fish will produce this eruption in some people whenever they eat it. A severe eruption of vesicles is produced by poison ivy, poison sumac, and some other wild wood vegetation.

Treatment.—Vesicular eruptions, caused by the vegetable poisons, should be treated locally by alkaline solutions. Some of the preparations which have proven useful are these:

(1.) Bi-carbonate of soda, one tea-spoonful dissolved in cold, soft water, and applied on soft, linen cloths, wrung out and laid on the skin. These should be renewed often.

(2.) Borax, a lump the size of a small hickory nut, dissolved in a pint of soft water, and applied as No. 1.

(3.) Carbolic acid, five per cent. solution, one fluid drachm; sulphite of soda, three drachms; soft water, six fluid ounces. Mix; apply by bathing the surface with the solution, using a bit of absorbent cotton or lint. *Do not use the same piece twice.* Repeat every hour.

(4.) Apply tincture of lobelia in the same way as No. 3.

The treatment for vesicular eruptions, which arise from internal causes, requires a constitutional remedy, like Happy Home Blood Purifier and Health Tonic, continued, in obstinate cases, for several months. Greasy and salty food should be avoided; the diet should be plain and free from condiments or other stimulants. Look well to ventilation of the sleeping apartment, which will almost always be found deficient. Bathe the eruption as little as possible—yet it must be kept clean. Mild soap, like castile, and only a little of that should be used. After washing apply Uncle Sam's Nerve and Bone Liniment, which cleanses, relieves itching, and heals.

7. *Tubercles*.—These are very small, hard pimples or tumors, which are frequently of the same color as the skin. They show an unhealthy condition of the system, with the presence of scrofula or

other blood disease. Their appearance in an old person sometimes precede cancer of the skin.

Treatment.—No external application ought to be made until after thoroughly cleansing the blood. Medicines act slowly in removing the morbid material which lies at the foundation of tubercular eruptions; therefore, they must be continued for some months. The diet should be made more nutritious or more varied; it should be decidedly changed to make it more animal or vegetable in character, with a view to supply deficient elements of food. It ought to be as different as possible from that to which the patient is accustomed. Uncle Sam's Liniment makes a good application to subdue any inflammation or irritation that may arise in the eruption. Should it develop a tendency to cancer, consult your family physician and such counsel as he may suggest; but, as you value your comfort and your safety, to say nothing of your money, avoid professional cancer doctors.

8. *Maculae* are spots or patches differing in color from the skin; they include freckles, "moth spots," "liver stains," etc. Freckles and some large, mothy or yellow spots are caused by the action of the sun upon the skin, and, of course, do not need medicine administered internally for their removal. Peroxide of hydrogen lotion, when perfectly fresh, will remove them, and is harmless. At bed-time soak the spots with it, using bits of absorbent cotton for the purpose. It loses its strength when exposed to light or air, and when it comes into contact with dirt of any kind; therefore, when it is to be applied, pour out just what is needed in a suitable receptacle, and immediately cork the bottle again. A preparation of two ounces of lemon juice, half a drachm of powdered borax and one drachm of sugar will remove freckles. Mix the ingredients together; let the mixture stand a few days in a vial, then rub the face occasionally with it. There is a species of "moth spot" which appears most extensively upon parts covered by clothing, and especially the breast. It is caused by a minute fungus, a parasite which grows upon the skin.

Treatment for Parasitic Moth Spot.—Let your druggist prepare a solution containing one grain of corrosive sublimate, dissolved in two ounces of soft water. Paint the spots twice a day with this, using a camel's hair brush to apply it. All clothing should be changed for that which has not been worn since being washed, lest some spores of the fungus remain attached to the clothing to start the disease afresh. This same lotion is useful for yellow liver spots and ring-worm. Should

the skin become irritated by it, omit for a day or two, and use Uncle Sam's Liniment to soothe it. The colored spots, which arise from constitutional causes, require Happy Home Blood Purifier to remove from the blood the impure matter which stains the skin.

Scabies, or Itch.—This disease is due to a minute insect, which burrows in the skin, and is conveyed from one person to another by touch and by the clothing. Mothers are well aware of the facility with which this disorder is spread among school children. The first sign of the presence of the itch insect is a vesicular eruption, usually appearing between the fingers, in the bend of the elbows and under the arms. It gradually extends over a large portion of the body, when allowed to go on without treatment. Some families are reluctant to believe their children have itch, and insist upon giving a constitutional remedy. All internal medicine is worse than useless, for anything capable of producing a medical effect is capable of disordering the healthy organs, when given unnecessarily. A child who is observed to be frequently scratching the skin in the localities where the itch insect is commonly found, should be carefully examined. Sharp eyes can sometimes detect, without the aid of a magnifying glass, a very fine line connecting the vesicles; this is the pathway burrowed by the insect.

Treatment.—Obtain from your druggist, (1) a lotion consisting of two drachms sulphuret of potassium (liver of sulphur) dissolved in four fluid ounces of soft water; (2) an ointment made by mixing half a drachm of the sulphuret with one ounce of lard, with enough oil of anise added to conceal the disagreeable smell. Remove all the clothing from the patient, and bathe every part of the skin, not forgetting hair, with the lotion, using a soft cloth or sponge that should afterward be burned. At the spots where eruption is greatest soak with the lotion, that it may penetrate to the insect. Let the patient be clad in freshly washed garments, and do not allow anything that was worn with the itch to be put on until it has been washed, or subjected to steam heat for some time. At bed-time, each night for a week, anoint the body from head to foot with the ointment, using it very sparingly. This is a certain cure for this most disagreeable affection. Any irritation produced by the ointment will be healed by Uncle Sam's Nerve and Bone Liniment.

Lice.—There are several varieties of lice which infest human beings. One specimen lives in the hair, and is almost always found

among the children in the school-room. Another variety inhabits the arm-pits and groins; still another hides in the seams of the clothes, where it deposits its eggs, and makes a raid upon the body for its food. It is quite important to know this peculiarity; otherwise, it is impossible to rid one's self of them. Lice are most troublesome to those of filthy habits, and if they remained with such people there would be little reason to complain; but, unfortunately, they swarm away from their original home, and linger on the cushions of street-cars, in railway cars, in omnibuses, on hotel sheets and blankets, until some one comes along who is free from them, and they then seek a new home. The wretched tramp, filthy and unfit for contact with decent, self-respecting people, in this free country, has a perfect right to go anywhere that anyone goes—strewing his filth, his vermin, and his diseases where they may reach the undefiled. For this reason those of most scrupulous neat habits can not always be certain that they are free from lice, and when attacked by spells of itching, for which there is no discoverable cause, should examine for parasites.

Treatment.—The best application for the heads of school children, which is both effective and harmless, is made as follows: Boil old or ripe potatoes with the skins on; pour off the water, which is green in color when of suitable strength. Wash the head thoroughly with this, wetting the hair to the end when long; use no soap, and let the lotion dry without rinsing off. The next day the head may be washed as usual; the lice and nits are both killed by this plan, and with less inconvenience than by any other. No living insect will be left if the work be well done. Should any escape, a repetition of this treatment will destroy them. Mercurial ointment is extensively used for destroying lice; it is very effectual, but needs to be used cautiously to prevent sore mouth or other evil effects of mercury; it is very undesirable for school children, as they are liable to take cold, which must be avoided when mercury is used. This ointment may be used in the arm-pits and groins for body lice, and there should be a complete change of clothing after applying it.

Hives, also called shingles, come out as red blotches, resembling the eruption produced by insect bites. They may affect any part, but usually appear below the waist, encircling one-half the body. There is a superstitious idea afloat that, if they should make a complete circle, the patient will die. We never heard of an instance where this happened. A blister forms on the top of each blotch, which fills with

a pearly gray fluid that dries up, making a scab, which finally falls off, leaving the skin beneath sound. It takes about ten days for the eruption to run its course, but sometimes fresh crops of blotches come out as one set is disappearing, and in this way the disease may be kept up a long time. The itching, burning sensation may be allayed by bathing with vinegar and water, and afterward dusting the surface with violet powder or arrowroot. Uncle Sam's Nerve and Bone Liniment is the most soothing and healing application that can be made. Internally, Happy Home Blood Purifier and Health Tonic is needed.

Ring-Worm begins with circular, reddish patches, slightly raised above the skin, and covered with fine dust-like scales; these patches vary from one-sixth of an inch to two inches in diameter. They give rise to intense itching and tingling. The treatment is the same as recommended for hives. Sometimes the eruption proves very obstinate; in that case paint it with tincture of iodine once a day, until it begins to peel; then heal with the liniment, as recommended for hives.

Scald-Head (Honeycomb Ring-Worm) is a disease caused by a parasite. The scalp is covered with small, round, bright yellow, dry crusts, with a cup-like depression in the center, through which one or more hairs pass. They are easily removed, and beneath them will be seen a shining, red, hollow spot, which quickly fills with another crust. No medicine can penetrate this surface until it is softened by a poultice. Slippery elm makes a good one for this purpose. Wash the scalp with carbolized water and castile soap; then, with a clean sponge or a roll of absorbent cotton, sop the affected spot with a solution of corrosive sublimate (one grain to two ounces); do this slowly, to allow it to penetrate the parasite; then dress with Uncle Sam's Nerve and Bone Liniment. This disease is usually found in scrofulous, ill-nourished patients; therefore, they need an improved diet, and Happy Home Blood Purifier and Health Tonic.

Boils are small tumors, which begin as red, angry-looking pimples, and are very painful from the start. They vary in size, from the "cat boil," which is no larger than an ordinary pimple, to the size of a walnut. The center is usually pointed at first, but sinks as the swelling increases, until the top is flat with a puckered center. The skin ulcerates, and pus streaked with blood runs out; two or three days later a solid mass of yellowish matter separates to form a core, which must

be pressed out. Boils which receive no treatment usually last fourteen days, and often come in crops, and may appear on any part of the body. They are produced in the effort of Nature to throw off or relieve the body of some impurity.

Treatment.—The first thing to be done is to secure regularity of the bowels, which are almost always constipated at the time boils appear. Eilert's Daylight Liver Pills are unequaled in bringing about natural action. They should be followed by Happy Home Blood Purifier and Health Tonic, and this remedy should be continued for a week or two after the last boil has disappeared. Imperfect action of the kidneys, and particularly that condition in which there is sugar in the urine, often gives rise to a succession of boils, attended with great debility. Such patients should have, in addition to the Happy Home Remedy, acetate of potash, in doses of half a tea-spoonful dissolved in lemonade, four times a day, and tincture of iron, ten to fifteen drops in water, three times a day. We repeat the caution to rinse the teeth with soda and water after taking iron, to protect them from injury. Poultices hasten the softening of the core. The most ancient poultice that we read of was made of figs, and was applied to a boil when Hezekiah was "sick unto death"—and he recovered. Flaxseed meal or slippery elm bark, ground fine, make a good poultice. Directions for making poultices will be found in the Appendix.

Carbuncle.—This may be considered a severe form of a boil, from which it differs in having no core, and in having several outlets for the pus, giving it a honeycomb appearance. It also has a tendency to spread if not kept carefully cleansed. It is preceded by loss of appetite, foul tongue, a feeling of weariness, headache and shivering. It begins as a pimple, gradually grows larger, while the skin around it becomes very sensitive, hot, and of a dark-red color. There is dull aching pain, sometimes of a severe throbbing character; but the pain is not as great as in a boil. Carbuncles vary in size from half an inch to six or seven inches, and are most frequently situated about the nape of the neck, or between the shoulders, although they may occur on any part of the body. Men have them twice as often as women; in aged people and those of feeble constitution, they sometimes cause death.

Treatment.—A severe but efficacious method of dealing with a carbuncle is to apply pounded ice and salt for about five minutes, to deaden the sensitiveness; then press upon the top of it with a stick of

lunar caustic, touching every part and pressing it into the holes, to thoroughly cauterize the whole tumor. After this apply a charcoal or carbolized linseed meal poultice. Renew it every four to six hours, according to the degree of inflammation present. It must not remain long enough to dry up; on removing it cleanse the sore carefully, using for this purpose a solution of permanganate of potash (twenty grains to the ounce). If at any time the carbuncle begins to smart and burn, or becomes more than ordinary painful, sprinkle thickly over it dry iodoform, and cover with absorbent cotton. The poultice ought not to be used when it is in this condition. Internally the patient needs Happy Home Blood Purifier and Health Tonic; and in addition, when the pain is severe or the loss of strength is rapid, give one of the following powders every four hours. Let your druggist prepare them; combining two grains of quinine with one-eighth grain of morphine in each powder, pulverized liquorice may be added to cover the taste, if preferred. Since carbuncles occur only in those of broken down health, nourishment is needed, and it must be given often. The diet recommended for consumption is a good one. Milk, custards, ice cream, kumiss, buttermilk, raw or slightly cooked eggs, prepared beef (see Appendix, under "Rennet"), game, fresh fish, are desirable articles for such patients.

Felons usually appear near the end of the fingers. There is at first a sharp, stinging pain, which is supposed to be caused by a sliver, but none can be found. A little later the affected part begins to swell, the pain and heat increases, and very soon pus forms; when this collects beneath the tendon, there is danger that the bone will become diseased.

Treatment.—Give internally a brisk cathartic dose of Eilert's Day-light Liver Pills. There are many external applications recommended, among which these may be named:

1. Throw a handful of wood-ashes in a quart of soft water, set it on the stove, and hold the finger in it while it is being heated as hot as can be borne; soak it not less than half an hour—then poultice.

2. Moisten the point where the sticking pain is felt, and press upon it a stick of lunar caustic until the skin turns gray in color. Poultice it until ready to open. If the caustic increases the pain, wash the finger in salt and water.

3. Take a very thin, sharp knife and make a cut down to the bone

and parallel with the tendons; cover the wound with iodoform, and over this apply a poultice to soften the swelling.

The latter is the one that is most effectual; the pain is not so severe as might be expected, and may be prevented by the hypodermic injection of cocaine into the swelling about half a minute previous to cutting it. Uncle Sam's Nerve and Bone Liniment makes a good dressing, after the felon has discharged pus freely. As it is an indication of impure blood, Happy Home Tonic is needed.

A Stye is a small boil, which forms at the edge of the eye-lid, often beginning around an eye-lash.

Treatment.—Vinegar applied when the swelling first begins to appear will sometimes check them, as will pulling out the eye-lash from the center of the swelling. Sulphide of calcium in sugar-coated pills, containing one-tenth of a grain each, will prevent others coming. One pill should be taken every three hours, for a day or two; then twice a day for one week.

Bed-Sores are caused by lying in one position long enough to destroy the capillary circulation of the skin at that point, and death of that portion of the tissues, whose supply is cut off, follows. They are dangerous, because they are liable to mortify when the patient is not sick enough to die. They occur most frequently on the lower part of the back and on the hips. At first the places look red, and if not immediately attended to, they will die, and portions of the skin will separate, leaving a raw sore.

Treatment.—Bed-sores can nearly always be prevented if the nurse is attentive. Patients who have been confined to the bed a long time, and those who are extremely feeble before being confined to the bed, should be examined daily. As soon as a reddish flush is seen bathe the place with tepid water, and anoint with Uncle Sam's Nerve and Bone Liniment; protect it from pressure by propping up the body with pads and pillows. Air-cushions and rings are better, when they can be had. The patient's position must be frequently changed; for in this low condition the circulation is very feeble, and a few hours steady pressure from lying in one position will do the mischief. The open sore may be treated the same as any ulcer.

Ulcers.—The name ulcer is given to a disease which affects the skin and mucous membrane. The covering of the muscle at the point where the ulcer exists is partially destroyed, and the raw surface is

covered with pus. This eruption varies in size from a point scarcely larger than a pin-head to a broad surface several inches across. It may be deep, extending into the tissues beneath the skin, or be seated wholly in the skin. There are many causes for ulcers, among which are the rupture of a varicose vein, blood-poisoning, diseased bone (the last-named follows after a fracture when the bone has been shattered, and splinters continue to work out for years after) and parasites. An injury that merely destroys the scarf-skin has been known to be followed by an ulcer that resisted all treatment for months. This happens only in scrofulous constitutions. Abscesses, carbuncles and boils are sometimes followed by an open sore that is very difficult to heal; burns and scalds also give rise to slow-healing ulcers.

Treatment.—Removal of the cause, where it still exists, is the first part of treatment. Varicose veins must be treated by measures which will remove the obstruction that gave rise to them, and improve the circulation in the affected part. After all obstruction is removed, electricity is an excellent remedy. Galvanism is the better form to heal the ulcer. To determine which pole to apply to the ulcer, ask your druggist for a piece of blue litmus paper, and when you are about to dress the ulcer, while it is still covered with the pus that has collected since the last dressing, lay the litmus paper upon it. If the pus turns the paper red, or gives it the least pinkish tinge, the negative pole of the battery must be applied to it; if, on the contrary, it remains unchanged, the positive pole is the one to apply. The sore should be cleansed with carbolized soft water and a mild soap; a soft sponge is to be moistened in hot, carbolized water, and laid over the ulcer, and the battery pole connected with this sponge. The other pole of the battery may be placed at any convenient spot. The current ought to be applied about half an hour. Afterward dress the ulcer with a very little carbolized vaseline, or cosmoline, Uncle Sam's Nerve and Bone Liniment, or mild mercurial ointment, using whichever produces the most soothing effect, and bandage the limb to support the veins, as shown in Fig. 24. The circulation in the limb may be vastly improved by *faradism*. The McIntosh Battery Company, of Chicago, will furnish further particulars regarding the use of electricity. Ulcers due to diseased bone can not be healed until a surgeon has cut down to the bone and removed all diseased portions. As this is done while the patient is unconscious from inhaling ether, it causes no suffering, and should excite no fear. Ulcers caused by parasites need applications to

destroy the germs. Some of the remedies which do this are mercurial ointment, corrosive sublimate lotion, made by dissolving one grain of corrosive sublimate in one pint of soft water; carbolic acid, five per cent. solution; boracic acid and iodoform, separately or mixed, may be sprinkled over the surface as a dry powder. Many cases will do better if poulticed with flaxseed meal or powdered slippery elm bark, applied very moist and hot, until softened, before using the disinfectant. The lotions should be applied with a sponge or soft cotton, so as to allow them to "soak in" and reach the germs. Ointments should be spread thinly over the surface, and the powders evenly distributed over them. *Do not use more than one of the disinfectants at the same time.* Try the one selected for several weeks, or so long as it produces no irritation and until the ulcer is healed.

No local treatment should be given ulcers due to blood-poisoning, except to keep them clean and free from any foul odor, which may be done by adding carbolic acid or permanganate of potash to the water used in washing them, until the blood is cleansed by suitable medicine. Happy Home Blood Purifier and Health Tonic can be depended upon to remove nearly all poisons from the blood. Frequently this medicine alone, with cleanliness, will be sufficient to heal the sores, which are sometimes mere outlets for a poison that Nature has vainly tried to dispose of in some other way. It is never prudent to heal any discharging sore or orifice that has existed a long time without first stimulating the excretory organs, or re-establishing their vigor when they are found to be inactive. Some irritable ulcers are made worse by soap and water; these may be kept clean by Uncle Sam's Liniment, using it on bits of cotton to soften and remove the pus. After ulcers begin to heal, do not rub them or allow any friction from the bandages. The delicate loops of fibrine, which unite to form a new skin, are very easily rubbed away; and after a few efforts to unite, if interfered with, they will give up trying to do the work. Very large ulcers will heal for a certain distance inward from the edge of the skin, but for some reason there is a limit to the increase of growth outward from a margin of skin. Surgeons now manage to cover such ulcers, when in a healthy condition, by skin-grafts—that is, they will pinch up a portion of the skin at some other part of the body, cut out a very small piece with the scissors or a sharp knife, and plant it on the raw surface of the ulcer. These bits of skin may be taken from other people, and are sometimes taken from animals. Some of them will adhere and grow,

making little islands of new and healthy skin on the surface of the ulcer. By repeatedly planting new grafts they gradually cover the whole surface, and the cure is complete. During this process it is of the utmost importance that the blood be kept pure and the body be well nourished. Happy Home Blood Purifier and Health Tonic should be continued during the treatment.

Cancer.—This originates in something which circulates in the blood; whether it be a peculiar germ which finds lodgment in the part affected and therein develops and multiplies, or whether it is a poison either taken into the body from without or generated within, is a question unsettled. One thing, however, is well known—cancer never appears in persons of sound health and with pure blood. It seldom occurs under twenty-five years of age, and a peculiarity of it is that the younger the person attacked the more rapidly it runs its course. In early youth its tendency, when left untreated, is to increase constantly until life is destroyed, while in advanced life it may remain torpid for years. There are two principal forms, and many varieties; for our purpose it is only necessary to divide them into hard and soft cancer. The last mentioned are most rapidly fatal. Those afflicted with either form should seek advice early, and of their family physician. The so-called cancer doctors are not to be trusted. They call every swelling a cancer; and, as this disease is not very common, while other tumors are, they manage to cure cases now and then, which keeps up their reputation; when they get hold of an actual cancer, they fail in every instance. It is time the public were warned, and taught the truth on this subject. Too many lives have been sacrificed to arsenic and other poisons used by the ignoramuses who advertise themselves as cancer doctors. Any physician who has studied medicine enough to honestly acquire a diploma, knows more about curing cancers than these pretenders; and it speaks well for the profession that, with all the temptation there is to misrepresent the facts to secure patients, there are so few guilty of this practice. We cite a case illustrating the great danger of consulting quacks: A gentleman a little past 50, in moderately sound health, had allowed his teeth to decay; one had partly broken away, leaving a jagged edge, which wounded the gum on the upper jaw, and kept it constantly irritated. After a long time—nearly a year at least—a small fungus growth (what you would call “proud flesh”) sprung up in the wound. The gentleman was terribly frightened, and went immediately to consult a cancer specialist, who, of

course, pronounced it a cancer—a rose cancer, which he described as a particularly destructive variety, that needed the most energetic treatment. Having first secured his fee, which was limited only by the patient's ability to pay, he proceeded to apply a plaster, which contained a large proportion of arsenic, also a lotion of the same nature. The poison was rapidly absorbed by the tissues of the mouth, and the patient began very soon to show the symptoms of arsenical poisoning, which destroyed him within thirty days. Had this man at first applied to a dentist, and, after the removal of the offending tooth, sprinkled a little burnt alum upon the growth, it is probable he would be still alive. The best course for any one to pursue, when a lump, kernel, or any suspicious swelling appears that may be suspected, or even feared to be a cancer, is to consult the family physician. He will advise whom to see in case he is in doubt about the case; and you may be certain he will recommend no one unless he has good reason to trust him, and has confidence in his skill. It is far better to ask advice about a harmless tumor than to go on fearing danger until the very act of thinking about it has excited it into activity, as it frequently will do.

CHAPTER XVII.

NURSES: THEIR DUTIES AND THEIR RESPONSIBILITIES.

There is nothing connected with the management of a patient suffering from a dangerous disease that causes the physician so much anxiety as the nursing. Many times life hangs upon the skill and faithfulness of the nurse. Really good, trusty, sensible nurses are not so common as they ought to be; but, when they are found, they are treasures in the sick-room.

There are plenty of women and a few men who profess to be skilled nurses; and this class, with the exception of those who have had the advantage of professional training in hospital or schools designed for that purpose, are a doubtful blessing. In a country where "everybody is as good as anybody else," to borrow a phrase frequently heard, it is difficult to convince the ignorant, conceited, self-willed personage we sometimes find installed at the bedside of our patients that the physician and nurse have each entirely distinct duties to perform. It speaks well for the average honesty and truthfulness of our race, that when individuals claim positively and constantly to possess certain qualifications they are given credit for possessing them until their claims are proven false. Unfortunately, this very admirable trustfulness in the matter of nurses has cost many a life of ten-fold more value than that of the ignoramus whose meddling has destroyed the last hope. This book has been written to very poor purpose, if it has not already conveyed the idea that something more than familiarity with the sick-room or a few drugs is necessary to the safe guidance of a patient through a dangerous illness. While it is true that the sick have better chance of recovery under good nursing with no doctor than with the best of doctors and no proper care, yet the grave responsibility of the medical adviser not only includes the management of the disease in its active state, but protection from future consequences. Every physician of experience will assent to the assertion that the very best nurse in dangerous cases, when a trained nurse can not be had, is the woman or man who think they know

nothing about sickness, yet are perfectly obedient in carrying out directions, and are quiet, neat, and unobtrusive in their behavior. It is to this class that this chapter is addressed; it is unnecessary for professionals, who receive all this instruction and vastly more, during their training; it would be unheeded by that other class which is ever ready "to rush in where angels fear to tread," and imperil human life by ignorance and conceit.

Care of the Sick.—The first thing to be done, when the sickness is severe enough to need a doctor, and while waiting for his arrival, is to place the patient in a cool, well-ventilated room, and keep him as quiet as possible. Do not admit visitors nor excitable persons to the bedside. There are a few things which it is appropriate to do in almost every case; these are, to give a bath when the patient is able to take it, to change the underclothing, to heat the feet when they are cool, and to apply cold to the head when it is hot. After the medical adviser arrives, his directions should control both nurse and patient. If he is worthy to be called in, he knows better than the nurse, the friends or any officious neighbor what ought to be done for the case.

Do not Attempt to Prejudice the Patient against the Doctor.—It is not right to expect him to take time to explain *why* he gives certain directions. If he takes time to explain *how* they should be carried out, that is all that ought to be expected of him. The patient and immediate friends are the ones to select the doctor, and the one to whom they are willing to trust the endangered life should be obeyed. It is a great responsibility to try to shake the family's confidence in their adviser, and one that sensible people will not incur without a serious reason—such as intoxication or mental derangement, which unfits him to exercise his judgment or his knowledge.

The Doctor's Directions Ought to be Faithfully Attended to.—All directions ought to be carried out as given. The medicine should be administered regularly at the right time, and in the exact quantity named. *When a nurse varies from the doctor's orders, she takes upon herself the responsibility for the patient's death*, in case he fails to recover.

Medicine glasses should be covered to keep out the dust, and separate spoons should be used for each kind. Rest of both body and mind is always needed in sickness; therefore, all talking should be in a low but distinct tone of voice, so that the patient may hear what is said. Nothing will excite a sick patient more than to hear whispering

or talking that can not be understood. It gives rise to the idea that something is being concealed, or that the case is hopeless. The appended list of "Don'ts" should be carefully read over before going into the presence of a sick or feeble person:

1. Don't bustle around with the intent of clearing up a room at a given time. Wait till the patient can bear it.

2. Don't spend much time in sweeping, dusting, or arranging things in the room. Whatever is done let it be done swiftly, quietly, and never when the patient is sleeping.

3. Don't let the door hinges creak—a little oil or soap will stop this noise; shut the doors gently, and never wear squeaky shoes within hearing of a sick person.

4. Don't read a newspaper in the room, because the rustling of the paper as it is moved is distressing to the nervous. Noisily turning the leaves of a book, or the scratching of a pen is extremely annoying.

5. Don't make a noise in replenishing the fire, or removing the ashes. Coal fires may be kept up silently by placing a shovelful of coal in paper bags, outside the invalid's room, where the rattling of the pieces can not be heard. A scuttle full of these filled bags may be carried into the room, and one of them at a time, as needed, may be laid on the fire, without being noticed. In taking up the ashes do not wait to scrape out all there are; take out several shovelfuls, but not enough to make a scraping noise on the bottom or sides of the ash pan. Wood fires can be managed quietly with a little attention.

6. Don't drop anything to make a sudden noise, nor draw chairs across the bare floor or carpet. Raise them up, carry to the place they are wanted, and then set them down gently.

7. Don't sit between the patient and the fire.

8. Don't try to regulate the temperature of the room by your feelings, but by a thermometer.

9. Don't neglect to write down the doctor's directions—especially when there is more than one kind of medicine ordered.

10. Don't dispute with a patient; never talk of deaths and the dying, or similar topics within hearing of the sick; talk little, and only in reply to the patient. Be hopeful and encouraging in actions as well as words, even in the most desperate cases. Let the physician decide when it is best to inform an incurable case of approaching death; a nurse ought never to hint at this, except by the request of the physician or near friends.

Delirious Patients Require Good Care and Careful Watching.—

However absurd the idea which they may have, never show them that you think it absurd. If it be one that excites fear, anger or grief, it causes as much suffering for the time as if it were an actual reality. The nurse who has tact will seek to prove its falsity, so that the patient will realize it without feeling opposed or ridiculed. For example, if there be fear that a robber, a wild beast or a ghost is in the room, take a lamp and look for the object, taking care to let your patient see that you are earnestly seeking it; let the patient be the first to say that it is gone, or that it was a trick of the imagination. Keep your eyes open during the search for the cause of this fancy. Observation teaches us that there is something in all these instances to originate the idea. It may be a garment hanging where it is dimly seen, and which assumes the form of a man or beast. Most distressing



FIG. 19. ANKLE BANDAGE, FIRST TURN.

Place the first end at *a*, and carry the bandage over it to hold it in place.

fancies originate in the images or figures on wall-paper. The paper, of course, can not be removed; but sheets or white paper may be tacked up to cover the wall within range of the patient's vision. The removal of the suggesting cause is often sufficient to restore the mind to its balance. Disputing or denying the idea not only excites, but produces a dangerous impression on the brain. "Trifles light as air," in some cases, are all that stand between perfect recovery and mental darkness for the remainder of life. The cry to go home, the scrambling out of bed to go there as soon as left alone, and all the other familiar acts of the sick, who are taken up with the idea that they are away from home, are often due to some change in surroundings, or to occupying a strange room. It is of no use to assure such a patient that he or she is at home; you must prove it with as few words as possible. Bring familiar objects or faces around them, or remove them to

their own room if they grow too excited for safety. If they be away from home, then quiet them with assurances that they may start for home in the morning or in the evening; this will allay the excitement, and they will probably forget all about it before the time comes. Delirious patients must be watched to prevent them from doing injury to themselves, even though they show no intention of this. They may suddenly try to do something that is dangerous, although their intention is harmless enough. For example, a very sick lady was apparently too feeble to feed herself; but in the night her nurse, who had fallen into a doze, awoke just as she was putting the sheets into the open stove at some distance from the bed; when questioned about it she replied: "I didn't mean to do any harm—I was only throwing some shavings on the fire, because I was so cold." The fire had burned low, the room had cooled off; some of the bed coverings had fallen to the floor, and the restless and chilly patient's poor, bewildered brain had mistaken the sheets for shavings; only the timely awakening of the nurse saved the poor creature from an awful death. She afterward recovered in mind and body, but remembered nothing concerning her peril.

The Selection and Preparation of the Sick-Room.—It is very unkind to keep a sick person in a small bedroom when there is a large spare room in the house. The custom of keeping the best room in the house for occasional visitors and formal callers, while it is denied to members of the family, at the very time they need it the most, is a refinement of selfishness. The preparation of the room for the comfort of the patient, when the attack seems likely to be a long one, or when the disease is infectious, includes the removal of all stuffed furniture, carpet, lace, and other expensive curtains and pictures. Strips of old carpet that can be easily washed, may be laid down to deaden the sound of the foot-steps; wood or cane-seat chairs only should be kept in the room; be careful to remove all rocking chairs that creak or make any noise when they are occupied. Regulate the light to be agreeable to the patient, but do not allow the sun to shine in the eyes or on the head. Make the bed nicely without lumps, but banish the feather bed, and all coverings that may not be washed in hot water. When the patient can sit up, or can be moved to a lounge or cot, take the bedding out-doors every day; if confined to the bed, let it be wide, so that one side may be occupied while the other side is uncovered to air, and cool; by this plan the patient may be changed to a comparatively

fresh bed several times a day by simply moving from one side to the other. The sheets and pillow cases should be changed every day, sometimes oftener. Where the disease is not "catching," and it is difficult to get washing done, two complete sets of bed clothes may be made to answer a week, by changing every morning and keeping one set in the open air and sunshine, while the other is in use. The garments worn by the patient ought to be fresh every day; when unsoiled on removal, a thorough airing will fit them for use a second time; when soiled, they must be washed before being worn again.

All Utensils Must be Kept Strictly Clean.—No discharges from the patient should be permitted to stand in the room a longer time than is necessary for the nurse to throw a shawl over her head and carry



FIG. 20. ANKLE BANDAGE, SECOND TURN.

This shows the opposite side of the same foot as Fig. 19, the hand holding the bandage ready for the second turn.

them out. Patients who raise matter from throat or lungs, and those who have a discharge from the nose or ears, should be provided with small squares of paper instead of handkerchiefs, or cloths; each piece as it is used may be thrust into a paper bag, such as grocers use. Bags can be made at home from brown paper with paste or glue. Paper bags are better than cloth, because they do not permit evaporation. The bags, with their contents, should be burned at least twice a day.

Foods.—Do not be alarmed during the first stage of any illness, because a patient refuses to eat. Loss of appetite at this time means that food can not be digested. When a physician is employed he should advise what food to give. Those suffering from typhoid fever and similar exhausting diseases, need nothing else than milk until the crisis is past. This should be given in small quantities, and often. A tea-cupful, every three hours, is all that most patients will take; some

need less. Weak patients need nourishment between 3 and 5 in the morning—at the time they usually wake and toss restlessly about, unable to sleep or rest. A cup of hot broth, or beef tea, or milk will do more to give them rest than medicine.

Method of Improving the Digestibility of Milk.—When the milk disagrees, add two tea-spoonfuls of lime water to each cup; a tea-spoonful of calcined magnesia may be substituted when lime water must not be given. Dissolve the magnesia in the milk, stir it well, let it settle a moment or two; then pour the milk off into another cup, so the patient shall not see any sediment, or know that any medicine is added to the food. Attention to just such little matters as these, has more to do with the welfare of the patient than most people will believe.



FIG. 21. HAND BANDAGE.

Hold one end of the bandage, which must be neatly rolled, on the back of the hand at *a*, and carry it around the wrist, as here shown, over the end *a*, which holds it securely; after covering the hand the last end may be secured to the bandage with pins, or with needle and thread.

A Varied Diet is Needed.—As soon as the patient can take a variety of food, it ought to be prepared in small quantity, and only two or three articles given at one time. It is more agreeable, and better for the digestive organs, to have the diet changed at each meal, than to have a large variety, and the same articles brought on each time. Cover the tray with a clean napkin, select the prettiest dishes, and make the food look as attractive as possible; eggs broken into boiling water are apt to have ragged edges—trim these off; broiled steak needs trimming in the same way. It makes all the difference in the world with the appetite of a fastidious convalescent, whether the food is daintily served or not; no larger quantity should be offered him than he may eat at once. The sight of a large mass of food will sometimes completely destroy the appetite of a person in delicate health; it is better to offer too little, and bring more if it be wanted, than to run the risk of all being refused.

Regularity in serving meals is very important. Do not keep the patient waiting, beyond the usual time of eating, for some dainty that

is not quite ready. It is better to reserve it until the next meal than to delay at this time. This rule holds good in the most dangerous stage: it may be impossible to give the full amount of nourishment each time; but a small quantity, if no more than a spoonful, is better than none.

Do not ask the patient what he wants to eat, but prepare something suitable, and bring it to the bedside; he will often be surprised into eating when he does not feel inclined to do so from hunger. In case the convalescent desires any particular article, should there be any doubt as to its effect upon him, ask the doctor before giving it, and, if he consents to its being given, prepare it as quickly as possible. Waiting is very wearing upon an invalid.



FIG. 22. ARM BANDAGE.

Fasten the first end on the back of the hand, as shown in Fig. 21, and turn it in the same way; as it is carried around the hand the second time, let it pass inside the thumb; then turn it towards the wrist, and so on, up the arm, as high as necessary.

Method of Feeding the Patient.—Those who are not too feeble to be propped up, may be made comfortable by placing a chair at their back, turned down so as to make an inclined surface, on which a pillow or a blanket is laid. Fasten a shawl around the shoulders, and a napkin at the neck; provide a basin of water for the hands, or a wet cloth to rub them off; dry them, and, if the lips are parched, they may be moistened. Have the food all ready, on a small tray, and hold it where the patient can reach it without effort. Do not watch his eating, or hurry him, or urge him to eat more than he wants. Those who are too feeble to feed themselves may have the head gently raised by the nurse's left arm slipped under the pillow; the spoon should not be full, so as to run over as it is pressed against the lips. Never

waken a feeble patient to take food, unless ordered to do so by the attending physician.

Do not keep the remnants of a meal in the sick-room, but remove all reminders of the food as soon as the patient has finished eating. Not alone the food, but water, lemonade, etc, soon absorb the gases generated in the sick-room, and are unfit for use. When the disease is contagious, all remnants of food ought to be burned; when thrown out, they are liable to convey disease to fowls or animals which pick them up.

Keep all Medicine Out of the Patient's Sight.—It is bad enough to be obliged to swallow the nauseous doses often needed, without being compelled to watch it, until the very sight of the bottle that contains it or the spoon which measures it becomes abhorrent.

Drink.—The best beverage for most sick people is cold water. The diseases in which cold water must be avoided are rare, and so severe that a doctor should certainly be called. In burning fever, when there is a desire for something sour, lemonade, cream-tartar water, currant jelly, or boiled cider diluted with water, or fresh cider may be given, especially when the tongue is dry, dark-red, and parched. The white, pasty-coated tongue, with or without a sour breath, calls for an alkaline drink. A little bi-carbonate of soda, carbonate of potash, or magnesia, may be added to the water—just enough to be slightly tasted by a healthy tongue when a mouthful is swallowed. A drink that will often relieve nausea, when accompanied by a sour stomach, is made in this way: Fill a goblet half-full of water, add a tea-spoonful or two of vinegar, according to its strength; the water should taste quite sour; add a few bits of ice, if you have it; then stir in a level tea-spoonful of saleratus, bi-carbonate of soda, or carbonate of potash; drink while foaming, but leave the dregs. Properly prepared, it tastes neither sour nor alkaline. The proportions of vinegar and soda, or potash, must be varied according to strength. Never give any kind of herb tea to a patient under a doctor's care, except with his advice or consent. They are medicines, just as much as anything he prescribes, and may destroy the effect of those he is giving. Nurses must remember that *medicines assist Nature*; they can never do more, and that their duty is to take care of the patient, not to do the prescribing.

To keep Ice in a Sick-Room.—Ice may be preserved several hours in the heat of summer, by this plan: Take a deep bowl, empty and dry;

tie over it a piece of thick, white flannel, perfectly clean, and large enough so that the part over the bowl may be pressed down in the middle, about one-half the depth of the bowl. Pound the ice into pieces of suitable size for the patient's use; place them, as dry as possible, on the flannel in the bowl, and cover them with the free end of the flannel; over this lay a napkin. When a piece of ice is needed, take it out without raising the cover more than is necessary. As the ice melts, it drains through into the bowl below; when the water rises as high as the flannel, pour it out, and dry out the flannel before using it again.

To Allay Thirst in Very Feeble Patients.—Those who are very weak are wearied by raising the head to drink, while there are conditions in which there is danger of sudden death from raising the head for any purpose; water and liquid medicines may be given to them through a bent tube, a tea-pot, or by means of the cups with long spouts made for invalids. When the thirst is excessive, and fluids disagree with the stomach, it can be considerably alleviated by placing bits of ice in the mouth, or by frequently bathing the lips with cold water; use a piece of lint or clean linen, and moisten the tongue also. Wash the palms of the hand, in clean, cool water, and if the patient can bear it, bathe the entire body at short intervals, using fresh, soft water without soap. A very hot, dry skin is refreshed by adding a little vinegar to the bath. A dry, parched tongue may be moistened by pure glycerine; the best quality only should be employed for this purpose.

Ventilation of the Sick-Room.—The air should be kept pure by frequent change, but the patient must not be exposed to currents of air when the skin is moist. During high fever, when the skin is hot and dry, there is no danger of a chill, even though the air blow directly upon the patient. Once a day, at least, the windows and doors should be thrown open to sweep out the air of the room with the cooler air from outside. The patient may be perfectly protected by covering the head and body closely with blankets, leaving only a small opening to breathe through. A window in an adjoining room should be kept partly open all the time, and the door between the rooms be left slightly ajar.

The Health of the Nurse Must be Cared for.—A nurse should have out-door exercise every day, and a regular time for sleep; she ought to leave the sick-room for a few moments, every six hours, and to eat a nutritious meal before returning to it; during her entire attendance

upon a patient she ought to be well fed. Light-colored clothing is better than dark, and it should be made of material and in a style that can be easily laundered. A large apron should be worn, which can be changed every day, or oftener if it is soiled. The nurse ought to be scrupulously neat in person, and the use of perfumery should be forbidden.

Those who attend upon contagious cases ought to wear a cap entirely covering the hair, as well as a dress and apron that can be removed just outside the door before going among unexposed persons.

Watchers.—The question of watchers is a troublesome one. In a protracted sickness people must depend upon such help as they can find, so that there is not much chance to make a selection of watchers; usually it is a blessing to find anyone willing to take charge of a very



FIG. 23. LEG BANDAGE.

This is begun at the foot, and fastened as shown in Fig. 20. It may be carried up in the same way to the hip, if needed so far, and then fastened with pins. It should be drawn smooth and snug, but not tight enough to feel uncomfortable. The usual object of a bandage is to support, not to compress, the parts.

sick person during the night, and friends are compelled to overlook deficiencies or unfitness in the necessity for procuring rest for the regular attendants. When the case is very critical, and the patient is worse during the night, it is better to reserve the regular nurse for the night attendant, and depend upon transient help during the day, when it is easier to call assistance, if an emergency arises. Watchers ought to be cheerful, kind, firm and attentive in the presence of the patient. They should reach the house of the sick at an early hour, and eat a hearty supper before going into the sick-room. So far as possible, all instruction for the care of the patient should be given before going into the room, or within hearing of the sufferer, because the latter is apt to worry, lest the instructions are not carried out, and to be kept awake by a feeling of responsibility in the matter. Take extra

wraps to wear toward morning, when one is liable to be chilly. The family should see that everything is provided in or near the sick-room that will be needed for the patient, and that a plain lunch is ready for the night attendants.

Duties of Watchers.—One of the most important admonitions to watchers is *to avoid talking*—either to the patient or to each other. A patient ill enough to need watchers, is in a condition requiring quiet and rest. It is better for one to lie down, when the services of both are not needed at the same time; and by changing about, neither will become exhausted, and yet assistance will be within call when wanted. The one remaining at the bedside should sit with her face turned away from the patient, when not occupied in necessary attentions. There is nothing more exciting to one who is slightly delirious, or is very ill, than to feel that every breath is being watched. If necessary to watch closely, let it be done adroitly, so that the patient will not feel “stared at.” The writer once had an experience that will explain the emphasis laid upon the advice “not to talk.” A lady who had recently passed through a great bereavement under peculiarly distressing circumstances was threatened with brain fever. Notwithstanding that everything possible was done for her, she was sleepless for five nights in succession. The case grew very unpromising, and it became evident her mind, if not her life, would be destroyed unless she could have sleep. Deciding to give her personal supervision the sixth night, to discover if it were not possible to do something more for her, the following plan was pursued: The attendant was requested to occupy a lounge just outside the open door, where she could hear every movement of the patient, while being out of sight. The family retired early; the room was well ventilated, and the lamp placed where it dimly lighted the space about the bed; the patient's hands and face were bathed in cool water; the sheets made smooth, the pillows comfortably adjusted, the bed coverings tucked in to keep out cold air, and everything was made perfectly quiet. Within half an hour we had the satisfaction of hearing her breathe regularly; the restlessness subsided, and soon she was sleeping. Except as she was aroused at regular intervals to swallow a little nourishment, which her exhausted condition demanded, she slept continuously, and in the morning the crisis was past, and recovery began. Upon questioning her afterward it was learned that she had been kept awake every night by the watchers—kindly souls, who had done the best they knew; therefore, she concealed the annoyance which they had

caused her, at the risk of her own life, lest she hurt their feelings. It seems that they talked incessantly, mostly in whispers, with frequent pauses, during which, to use the patient's language, "they came to the bedside and stared at me as if I were a natural curiosity, anxiously asking me if I felt worse, if I wanted anything, and making me feel as if I must fly away." At lunch they gossiped about her affairs in a low tone, but perfectly audible to her, rattled their tea-cups, spoons and knives, each sound seeming to pierce her brain; the fire was replenished with rattling of coals, dropping of poker, or thumping of scuttle—in short, they were unintentionally noisy and irritating. Blessed with strong nerves that had never been unstrung by sickness or trouble, they did not dream of the harm they were doing.

Men or women who are compelled to work hard all day should not be called upon to watch at night. They can not be depended upon to look after the patient. No matter how willing they may be—exhausted Nature demands rest; and they are liable to fall asleep, in spite of themselves.

The directions for the watchers ought always to be written out in full, so that they can make no mistake, nor be compelled to arouse the regular attendant to learn what they forget. It gives the patient, also, greater confidence in them. Many persons who are not particularly sensitive in health, are easily annoyed when their nerves are irritated by sickness; for that reason not only watchers, but all others engaged in their care, ought to avoid habits which make them disagreeable. A breath scented with onions, or loaded with foul-smelling excretions or tobacco, is bad enough at any time; it is distressing to one in ill-health. Never breathe in the face of a patient while bathing or otherwise engaged in close attendance upon him. The habit of picking the nose with the fingers, or of cleaning the chamber utensils, and then handling the food or medicine without first washing the hands, is sometimes responsible for loss of appetite and nausea. Never taste food or medicine in presence of the patient, nor measure out a dose in a spoon that any one has used, until it has been washed.

Caring for the Hair.—Lady patients need to have the hair kept in order, or it will become hopelessly tangled. It is better at the beginning of any illness that threatens to confine the victim to her bed, for even a few days, to straighten the hair, and, parting it in the middle, make two loose braids, which are to be firmly fastened at the ends, to prevent unbraiding. When this has been neglected, and the

hair is already tangled, separate a handful, without raising the head, and gently brush it, beginning at the ends, until the hairs are separated—then work gradually up to the head; allow the patient to rest an hour or two before doing any more, and, when completed, braid it. The hair must be handled very gently; when the tangle is very close, oil the hair, and shake it apart before trying to brush it. It is not uncommon for lice to be found in the heads of weak patients who have been ill a long time. To remove them, ask the doctor's opinion regarding the application of a little mercurial ointment; never employ it without his consent, and use only a very small quantity; rub it behind the ears and around the margin of the hair where the nits are most plentiful; then cover the hair closely with dry cotton-batting, heated by laying it on a hot stove. The lice will generally leave the hair, attracted by the warm batting; after an hour, remove it and burn it immediately. When the ointment is forbidden, use the cotton without it. During and after severe fevers, the hair and scalp ought to be washed. A lump of borax, the size of a small hickory-nut, added to each pint of water makes it more cleansing; only the best hard, unscented soap should be used.

The Nails.—The finger and toe-nails need to be kept clean, and occasionally cut; this should be done quickly, using a sharp knife. When very hard, soak them in warm water containing a little soda, to soften them. They are sometimes very brittle, breaking off so as to expose the quick. To restore them to a natural state, anoint them freely with Uncle Sam's Nerve and Bone Liniment.

How to Lift a Helpless Patient.—When the patient has slipped down in bed, do not drag him up; if strong enough, he must clasp his arms around the neck of the nurse, who leans over him, when it will generally be easy to lift him a little from the bed and raise him up. In case the nurse is not strong enough to do this, the sheet on which the patient lies may be drawn up towards the head of the bed, and an extra sheet be laid over the space uncovered at the feet. When it becomes necessary to move a helpless patient from one bed to another, he should be moved on the lower sheet. It may be done more easily when there are four persons to help, one for each corner. Protracted illness is liable to break down the nurses, who are compelled to lift the patient every time he needs to be moved. It is better and cheaper to provide one of the convenient contrivances made for the purpose of moving and raising the helpless in bed. They may be had of surgical instrument dealers, and your druggist can procure them for you.

Cushions and Pads for the Sick.—It is often necessary to prop up a limb or to ease pressure upon some part of the body. Feather pillows and cushions, are “too heating;” besides, they absorb disease emanations, and are too valuable to be destroyed. Cushions may be stuffed with soft shavings, with cut straw or chaff, and pads of various sizes may be filled with bran. These are convenient for many purposes, and may be frequently emptied, the contents burned, the cases washed and filled again. A bag of sand is excellent to retain heat, and on account of being soft and yielding, is often better than a soap-stone or brick.



FIG. 24. FOUR-TAILED BANDAGE.

This is a very convenient bandage for the head, which may be adjusted in a variety of ways, according to the purpose it is to serve. In this illustration is shown a square of cloth long enough to pass over the forehead, to cross at the back of the neck and tie under the chin. At each end the square is divided into two parts, a space in the center large enough to cover the top of the head being left whole. The back halves are brought under the chin and fastened there; the front halves cross at the back of the neck, and are brought around the neck to fasten under the chin.

Preparation of Bandages.—The nurse is expected to know how to prepare such bandages as are wanted, and ought to know how to apply them when necessary. Roller bandages are strips of different widths, varying from one to four inches, made of loosely-woven cotton or flannel. The strips are made several yards long, and rolled up tight, before applying, for convenience. An old cotton sheet makes good bandages; the hems must be torn off and the ends laid flat on each other, and basted where they overlap on the four sides. Never use cloth that has not been washed; it will shrink when moistened, and may make the bandage dangerously tight.

Cautions in Regard to Bandaging.—A bandage must never be tighter in one place than another; unequal pressure may do injury. Do not let the edges cross any sore spot; cover the tender place with

the full width of the strip; always begin to adjust it at a point farthest from the heart—that is, to bandage the leg begin at the foot (see Fig. 19), or the arm, begin at the fingers. Let the bandage be laid perfectly smooth, avoiding wrinkles. It is sometimes necessary to pack cotton batting or absorbent cotton around the joints to prevent too much pressure on the bone; the ankle and wrist joints must be specially guarded in this way. A *sling* is a square piece of cotton, or a large handkerchief, having two of the opposite diagonal corners tied about the neck, to support the arm. It should be brought above the elbow and extend to the wrist, or if the hand is to be supported, to the tips of the fingers. A *many-tailed bandage* is a long strip crossed by short ones, fastened at right angles. It is much used in bandaging the limbs, because one strip may be unfastened and removed without disturbing the rest, when necessary to examine an injury. (An example of this style is shown in Fig. 24.)

A Nurse Should never Reveal Family Secrets.—During illness, especially when the patient is delirious, the attendant is liable to learn many things that ought never to be repeated. Such information ought to be regarded as a sacred confidence, and any person who has neither sense nor conscience enough to keep it a secret is unfit to be intrusted with the responsible duties of a nurse. It is not advisable to inform patients, on recovery, of their acts and speech while sick; it never does any good, and always harms a nervous patient.

Subjects which Should not be Referred to before a Patient.—The cruelty of thoughtless people, who speak of everything that comes into their mind in the presence of the sick, is something from which a patient ought to be most scrupulously guarded. Never talk yourself, nor allow any one else to speak of deaths, funerals, accidents and topics of that description in the hearing of a patient. It is almost a universal practice, in town and country alike, for callers to discuss the most depressing subject that is to be found. The atmosphere of the invalid's room seems to be suggestive of all the dreadful experiences within the history of the visitor, or known to her by tradition, and she is certain to relate them in full, unless checked by the tact and firmness of some one responsible for the patient's welfare. Another visitor, with whom it is more difficult to deal, but who should be suppressed, is the one who calls to look after the patient's soul. We have the authority of the Good Book itself that there is a time for everything; and most emphatically the *time* to call a sick person's attention

to death *is not* when he is struggling in the throes of disease, and his life hangs by a thread that a rude jar may snap asunder. *Never, under any circumstances whatever, should any one be allowed to converse about dying with the sick, who are not in immediate danger of death, without first consulting the physician in attendance.* A patient that is beyond recovery should be permitted to see any one he wishes to see, and at any time when an invalid asks for a religious adviser, his request ought to be granted; but give him his choice, and do not try to force upon him any one that he does not want. The consolations of religion will be sought by those to whom they will be of any benefit, and to others the subject will only bring distress. Be merciful enough to spare their last moments, and leave them to their Maker.

CHAPTER XVIII.

ACCIDENTS AND EMERGENCIES.

The most important thing for any one to do in the presence of an accident is to exercise self-control; and those who do so can almost always think of some way to relieve the injured, or preserve them from further harm until skilled assistance arrives. There is peril in the well-meant but rash officiousness of excited by-standers; and, as they are certain to crowd about the victim, cutting off his supply of fresh air, they must be dispersed before trying to discover the nature or extent of the injury. An excellent way to accomplish this, without giving offense, is to set each one at work, no matter if it is of no consequence; in the attempt to assist, most people will regain their self-possession, and become really useful helpers.

As soon as there is an air space made, if the patient can speak, ask where, and how much he is hurt, and then look to see if the injury is serious. Sometimes fright will unnerve a man, and he will think himself in danger when he is not hurt at all. An amusing instance of this kind occurred in this city. A man was passing a saloon just as a fight began; several shots were fired, and he was struck in the breast over the heart. He fell down pale and trembling, gasping "I am shot!" The patrol was called; the man was gently lifted into the wagon, and taken to the hospital. The surgeons gathered round him when he arrived there, to discover the nature of his wound; his breast was bared, but not a scratch was found upon it. An examination of his coat revealed the bullet imbedded in the folds of the paper he had thrust into his pocket but a moment before he was shot. If the patient can assist in locating the injury, then proceed according to the directions given in this chapter for treating that particular accident. When he is unconscious it is not always easy to find out where, or how much damage has been done. *Do not waste any time in inquiries* until these three things have been attended to:

1. Turn the body upon one side, so that breathing will be easier

(if permitted to lie on the back, the tongue may fall back into the throat and close the air passage).

2. If blood be flowing from mouth or nose, and in all cases when the face is dark red, raise the body into sitting posture and prop up the head. If the face be pale, lower the body to the horizontal position, but keep the head on a level with the shoulder.

3. Loosen any tight bands around the neck or waist, and unfasten the collar. After this, try restoratives. Sprinkle the face with cold water, but do not dash it on to wet the clothing. Ammonia may be held near the nose, but do not spill any upon the patient. We have seen very serious injury done a fainting person by spilling ammonia on the face. *Do not give a stimulant* when the head is injured, or blood is flowing freely. The majority of people act as if they believe the first thing to be done for a patient under these circumstances is to give a drink of water or liquor; this is a mistake—a fatal one now and then. *Never pour any liquid into the mouth of an unconscious person*—leave that for the doctor to do when it must be done; the risk of strangling is far greater than any harm that can possibly follow from not giving it.

Hæmorrhage after Accidents.—The first thing to be done for open wounds is to stop the bleeding. Ice, cold water, exposure to air, raising up the part higher than the heart, and pressure are the measures most easily employed. When the blood spurts out in a bright, red jet, pressure must be applied, and at once. A young man had a foot cut off by a mowing machine; the driver instantly sprang to his assistance, laid him down quickly, rolled up a coat and placed it under his head, then ran half a mile for help; but when he returned the wounded man was just gasping, and died before he could be moved. His life might easily have been saved had his friend been sufficiently thoughtful to tie a handkerchief about the leg to close the artery. Pressure is successful only when there is something hard to press down upon, so as to hold the bleeding vessel firmly. Hæmorrhage from the neck or arm-pit, where the tissue beneath is soft and yielding, can not be checked by pressure on the wound. The vessel must be pressed upon at some point where it lies near a bone (see F, Fig. 25, for an example of this method of controlling bleeding).

Caution.—In applying pressure it is dangerous to cut off all circulation through the wounded part; for often half an hour, sometimes less, when this is done the blood clots in the vessels, completely closing

them, and the parts supplied by them die. There is another danger, and that is that bits of the clots may be washed into the circulation, and, being carried to the heart, will clog up one of the valves, producing instant death. When it is necessary to tie something around the limb for a short time, it is better to fold a handkerchief into a small, thick pad; lay it on the limb just above the wound, tie another handkerchief loosely around the limb at that point (a suspender may be used instead); slip a stick, a pencil, a small rod, or anything suitable that is handy through it, and turn it around and around, to twist the handkerchief

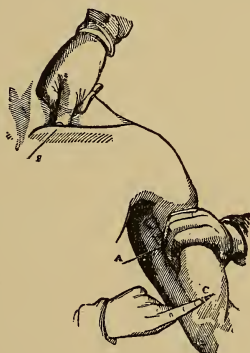


FIG. 25. CONTROLLING HÆMORRHAGE BY PRESSURE.

C shows method of applying pressure in the wound.

A the way to stop the flow of blood when it spurts out near the elbow, or between the shoulder and elbow.

F the location of the artery, and place to compress it when the bleeding is from the arm-pit or around the shoulder.

bandage down tight on the pad. The greatest pressure will be on this point, and as soon as the blood ceases to flow it is tight enough, yet the flow of blood through the other vessels is not entirely checked. It may be known that a dangerous pressure is being applied when the parts beyond the wound turn blue or dark colored and become cold. In the case of the young man referred to above, who had his foot cut entirely off, his companion should have tied something very snugly around the leg, as low down as possible, as there was no other way in which he could have checked the bleeding.

After great loss of blood the face becomes pale, pulse feeble, the

patient feels weak, the breath is interrupted by frequent sighs, the temples throb, the skin becomes cold, and at last there is fainting. During unconsciousness the blood moves slowly, a clot forms, and the bleeding ceases; but, as soon as the patient rallies from the fainting fit, the heart beats faster, the blood is thrown out with more force, which may remove the clot, and then the hæmorrhage will begin again.

Treatment.—It is important that the patient's mind and body be kept as quiet as possible, and the position of the body should be such that the flow of blood to the bleeding part shall be hindered. In almost all cases it is better for the patient to lie down with the head on a level with the shoulders, because the blood is carried with less force when the body is in a horizontal position. After an accident, attended by great loss of blood, the patient must have his strength built up by an extra amount of good blood-making material. He ought to eat from four to six times in the 24 hours, plain, easily digestible food, selected to combine all the materials needed by the system. Happy Home Blood Purifier and Health Tonic will be needed to stimulate the organs of digestion.

Moving the Patient.—As soon as possible after an accident, the patient should be taken home, or to some place where he can receive proper care. His family should be notified by some one who has sense enough to deliver the message, without alarming the friends unnecessarily. Before moving him, look for broken bones; when a leg or arm is broken, it must be held steadily, as all motion jars the bones apart, or drives broken ends into the flesh, causing excruciating pain, and increasing the damage already done.

Never let a broken leg or arm hang down, swinging with every step of the bearers—it is a most cruel proceeding. Prop up the broken limb in as easy a position as possible, using a coat rolled up, bunches of grass, or hay, pieces of turf, or sticks, deftly arranged to keep it steady, and in transferring the patient from the litter to the bed, be careful to hold the broken parts so that there will be as little motion between them as possible. A door taken off its hinges makes a good litter; a board or a window shutter also. When an accident occurs in the fields, take rails and lay across them other rails, or brush, to make a firm support. An excellent litter may be made from a mattress, by fastening ropes at the corners. Lift all together and keep step.

A man who has been hurt upon the head severely enough to lose consciousness, one who has a wound penetrating the chest, or who has

lost a large amount of blood, should not, on coming to his senses, be allowed to walk, to mount a horse, or sit up in any vehicle; keep him lying down on the way from the place of accident to his bed. When injured in other ways, he may be carried on a "chair" made by two persons with their hands grasping each other's wrists, while the arms of the patient are around their neck.

What to Do While Waiting for the Doctor.—After placing the patient in bed, banish all from the room, except one or two quiet attendants. Open the windows to let in fresh air, fan him when the room is warm, or he breathes with difficulty; allow no talking within hearing. It is not positively certain, in any case of apparent unconsciousness, that he may not have recovered enough to understand what is being said before he begins to open his eyes, or move, and he may be unnecessarily excited at a very critical time, if compelled to hear his condition talked over.

Send clear directions to the doctor as to the nature of the injury. It often happens that he finds, after traveling miles to visit a case, that an important instrument or medicine has been left at his office, because he had no reason to suppose he would need it. If bones are broken and splints are needed, by the time he has sent to his office for them, the swelling may become so great that they can not be applied. A broken blood vessel may become unmanageable during the delay in sending for the implements necessary to secure it firmly. If the messenger can not be trusted to remember the directions given him, let them be written; it will often save valuable time to do so.

Have water heated, and bandages prepared, or rather let cloth be provided ready for such bandages as may be wanted. It should be soft, clean, and free from starch. No sponge should ever be used on an open wound, that has ever been used before for any purpose. And it might be well here to add a caution against the bleached sponges sold on the streets in cities. At hospitals, the sponges used on patients are thrown away; these, gathered up by rag pickers, are bleached and sold as new sponges. They are very soft, and mothers like them for washing the baby, but they are dangerous. The bleaching material can not be depended upon to destroy the germs lodged in them from old sores, or diseased blood.

It sometimes happens that a doctor can not be found, and the case needs immediate attention. *Cleanliness* and *common sense* will go far towards helping on recovery. Bear in mind that Nature has, already

prepared, the materials for repairing injuries, and all the doctor can do is to remove obstacles, and give Nature a chance.

Flesh Wounds.—Wash out any dirt, sand or other material that has lodged in the wound, then hunt for bits of cloth, wads, splinters of bone, pieces of metal and the like. The finger is the best guide, when the wound is large enough to admit it. Workmen whose flesh is covered with dust or dirt from their work must have their wounds carefully cleansed, for they can never heal permanently while dirt of any kind is left in them. Sometimes far more serious consequences than a failure to heal follow when wounds are not well cleansed. The dust from some metals poison them, endangering life. A boy about 10 years old was wounded on July 4th, in the palm of his hand, by a toy pistol. Two weeks later he died of lockjaw. The doctor who examined the wound after death found a paper wad, deep down, pressing upon the nerve, which had undoubtedly caused the lockjaw.

After cleansing the wound, bring the separated parts neatly together; do not crowd them too close—there must be left some space for the edges to swell; it increases the scar to crowd them together, or to leave them too far apart. There are several ways of holding the edges of a wound: 1. By strips of adhesive plaster. It should be cut into strips about one-fourth of an inch wide, and long enough to reach over the wound about three inches on each side, if a large one. The plaster is softened by heat; the strips may be warmed by wrapping them around a tea-kettle, or basin of hot water, cloth-side in. Lay one end of the warm strip on the dry skin, one side of the wound, pressing it down to make it stick; then, while holding the edges of the wound near together, fasten the free end of the strip on the dry skin of the opposite side.

2. The edges of a wound which gapes widely may need to be sewed together. Use saddler's silk, wet it in water containing carbolic acid, and a common needle, when a surgeon's or glover's needle can not be had. Stitches are needed in locations where plaster can not be made to hold. These should be avoided when possible in wounds of the face, because they are liable to increase the scar.

3. In some places a large wound may be closed by stitching through adhesive plaster, instead of the flesh, in this way. Cut the plaster in as wide strips as can be laid on smoothly; warm and fasten

on the flesh parallel with the edges of the wound, and at a little distance from them. Leave about one-eighth inch of the plaster strip on the side of the wound, free; that is, not attached to the skin. Prepare the silk as before, and stitch through the free edges of the plaster, instead of the lips of the wound. Draw them near, but not too close together.

When a wound bleeds freely, the dirt and foreign substances are commonly washed out by the blood. The hæmorrhage stops only when a clot is formed; in dressing such wounds do not wash out the clot, but seal them up "in the blood."

Scalp Wounds need special care to prevent erysipelas setting in. They must be kept clean, and may often be closed by tying the hair over them. One reason why wounds of the scalp so frequently prove dangerous is the unclean condition of the hair. As soon as the injury is received the whole head should be washed in soap and water, then rinsed in carbolized water, before dressing the wound permanently. The brain being so near, is always in danger when there is any inflammation of the scalp.

Dressing Wounds.—Each surgeon has his favorite method of treating open wounds, and when the patient has an attending physician, the treatment must not be interfered with. The law makes a medical practitioner responsible for his work only when he has been permitted to manage the case without hindrance from patient or friends. In some cases of open wounds, and under certain circumstances, it imperils a patient's life, even to remove the dressings to examine them, unless precautions are taken, which none but a physician would think of; therefore, do not forget that to meddle with a doctor's treatment is to assume a grave responsibility. It is right, if you have doubts in regard to the case, or suggestions to make, that you acquaint the physician personally with the fact, but never do so in the presence or within hearing of the patient.

The edges of the cleansed wound having been brought near together and firmly secured, lay over it a piece of soft, clean linen, moistened with Uncle Sam's Nerve and Bone Liniment. When the patient is healthy nothing more will be needed except to wrap up the parts or bandage them, to keep the edges of the wound from being drawn apart. Do not remove the dressings until the parts feel stiff or ache, or are uncomfortable; then open very carefully, so as not to

break the tiny meshes which have been woven between the several surfaces. If it be necessary to remove the adhesive straps across the wound, begin to raise them at each end, peeling them off towards the wound, so as not to drag the edges apart. These straps, stitches or whatever holds them together, should be left undisturbed for several days, unless they become loose. If the wound has no unpleasant smell, and looks pink, do not wash it; the fluids that may have dried on the skin near the wound may be gently removed by soaking a bit of cotton, lint, or linen in the liniment, and using it to dissolve the dried material. Cover with a fresh piece of linen as at first, and use fresh wrappings or bandages to inclose it. Wounds are more frequently irritated and made unhealthy by too much care than by the lack of it. In all cases of wounds to be healed, when the patient shows signs of impure blood, give Happy Home Blood Purifier and Health Tonic regularly. It will hasten healing and lessen the size of the scar.

Unhealthy Wounds.—A healthy wound, during the healing process, is covered with a thick, creamy, odorless fluid called pus; when the wound is injured by harsh treatment, as rubbing with a cloth or sponge, or irritated by applying ointments or salves, or when the blood is impure, this pus becomes thin, watery, foul-smelling, and healing goes on slowly. It then needs washing daily. Let your druggist prepare a five per cent. solution of carbolic acid; add two table-spoonfuls to one pint of warm water, in a clean bowl—this is called carbolized water. Do not rub the wound, but squeeze out the water from cloth or sponge, letting it flow over the surface to wash it off. Absorbent cotton is very useful, and should be provided when possible for these cases. Use a bit to soak up the moisture after washing, then cover the wound with the dry cotton. This soaks up the unhealthy fluids that form on it, and keeps the surface clean. The same piece should never be used but once; burn it as soon as it is taken off.

What to Do when the Clothing is on Fire.—The greatest danger is from breathing the flame; therefore, as the flame goes upward, the person on fire should lie down, or be thrown down. It is rare, indeed, that a person whose clothes are on fire has presence of mind to lie down, or do anything else that ought to be done; therefore, any one witnessing such an accident should be prompt to act. A

rug, coat, shawl, or woollen blanket, or piece of carpet must be thrown over the flame to smother it.

The treatment of burns and scalds depends upon the amount of surface covered, the depth and the location. They may be conveniently divided into three classes or degrees. Those belonging to the *first degree* are where the skin is only reddened, but the pain is severe. This form is most commonly caused by steam from a tea-kettle. Those of the *second degree* are blisters. The *third degree* includes all deep burns that destroy not only the skin, but the flesh beneath, making a yellow or black mass. The amount of pain caused by a burn or scald varies; its presence is a good omen. A large burn, with no pain, means extreme danger. The amount of surface affected is of more importance than the depth of the burn; a scalding, which barely raises a blister, over a large part of the body, is far more dangerous than a small burn that destroys the tissues beneath the skin, because, in the former case, the action of the skin is interfered with and the body is poisoned in the same way as the gilded boy previously described, by retained perspiration. It is extremely rare for recovery to take place when more than one-eighth of the surface is scalded or burned.

To Dress a Burn.—Burns of the first degree are very painful, but not dangerous, unless they cover a very large surface. The best application to “take out the fire” is Uncle Sam’s Nerve and Bone Liniment; moisten old linen with it and lay on the burn, and cover with a dry cloth; change once or twice till the pain is wholly gone; then leave it bound up until all soreness has disappeared. Soft soap applied quickly; a paste made with bi-carbonate of soda and water spread on thickly; lard and finely powdered chalk made into a paste; cloths wrung out of cold water and frequently changed, are some of the other remedies which will give prompt relief. Burns of the second degree, that is, a blistered surface, must be dressed very gently. The clothing ought to be taken off carefully so as not to tear open the blisters. If it sticks at all, it should be cut off with a sharp knife or the shears. Keeping out the air is the main point in this kind of a burn. There should be applied at once a good liniment. Uncle Sam’s Nerve and Bone Liniment soothes the pain, acts as an antiseptic, and favors healing. Carron oil, composed of equal parts of linseed oil and lime water, is also a good application. Apply the remedy on absorbent cotton or lint, which should be saturated with it, and the burn

covered closely to keep out the air. In case neither of the above remedies can be had promptly, sift flour thickly over the blister and cover with cotton or linen. The first dressing should not be disturbed for 24 hours. Burns of the third degree, when they cover much of the surface, are generally fatal. The patient must be placed in bed; the clothing, or what remains of it, be cut away, and cotton batting or absorbent cotton, saturated with one of the preparations described for blisters, may be applied. A doctor should be sent for, because it will require skill to save life after a burn of this kind. When much of the skin has been destroyed the patient may die within a day or two from congestion or inflammation of internal organs, or, at a later period, from exhaustion, the result of long and profuse discharges from the sores.

Coal Oil and Gasoline Explosions.—Coal oil and gasoline explosions furnish the greater number of seriously burned patients which come under a physician's care. Accidents occur because people do not understand the nature of these very common articles. Good coal oil can not be set on fire with a match. Pour a little into a saucer, light a match and touch the oil; if it takes fire it is dangerous to use in lamps; oil which is up to the legal standard will quench the flame of a match as if it were water. Spill a little of the good oil upon the carpet or floor and leave it—after a time it will disappear; we say it evaporates; by that we mean that the oil has been changed into a gas, that has mingled with the air and been carried away. Turn a lamp very low in a closed room; after an hour or two, go in directly from the fresh air; the smell of coal oil will be so powerful that you open the doors and windows at once to let out the gas. It is gas, not oil, that is burned in our coal-oil lamps. The wick draws the oil up to the flame, it is heated and vaporizes, or is transformed into gas, before it burns; when the flame is turned low, the oil vaporizes faster than the gas can be burned, hence it is given off into the room to pollute the air, and irritate the throat and lungs of people breathing the air. Coal oil standing in a can in a warm kitchen vaporizes slowly, but the space between the oil and the top of the can becomes filled with gas in the course of a day; it is this which makes it dangerous to fill a lighted lamp, or to fill any unlighted lamp before an open fire; as the can is turned down to pour out the oil the gas flows out, and the instant it touches a flame it takes fire; then follows the explosion. A gentleman in a city office placed his office lamp on a stool about five

feet from an open stove in which was a glowing bed of coals. He took his can to fill the lamp; an explosion followed, in which he was considerably burned, and, after the fire company had departed, he found his carelessness had caused a damage of \$200 to his office. He was fortunate that it was no more serious, but feels that he paid rather dearly to learn why, and how, coal oil explodes. A lady who is regarded among her acquaintances as highly intelligent, and was for many years before her marriage a teacher, one winter's evening noticed the light of her lamp growing dim. The girl had neglected filling it; around the floor near the table were playing her four little children. The lamp was one of the kind which has an opening at one side closed with a brass cap. She turned the light low, took off the cap, and started to fill the lamp from the can; a friend who was spending the evening with her, cried out in alarm, and sprang to catch the can from her hand, but too late; the tiny stream of gas had already touched the flame, the explosion came; both the women and the children were set on fire. With unusual presence of mind they made good use of the rugs, which were fortunately in the room, and all were saved except the baby, which had crept up to, and was clinging to her mother's skirts at the instant of the explosion. She was cruelly burned, and died in a few hours. This is cited to show that it is not so much ignorance as carelessness which causes the numerous accidents of which we read.

Gasoline is far more treacherous than coal oil; its first cousins, benzine and naphtha, are always dangerous in the hands of stupid or careless people. Several years ago it was quite the fashion for ladies to clean their light kids with one of these articles. To do it nicely the kids were put on the hands, and were then washed in one bowl of benzine or gasoline, rinsed in another, then dried on the hands. Occasionally a lady would hold her hands before the fire to dry them more rapidly; of course they would take fire, and the hands would be horribly burned before anything could be done. These accidents became so frequent that this method of cleaning gloves has been well-nigh abandoned. Many people are misled regarding the danger of these fluids by the alleged tests of safety which dealers show their customers. Gasoline will be poured on the floor, lighted with a match and burned off without setting the boards on fire; hence it can do no harm if it does take fire, argues the seller. The error is not in taking into account the explosive gases that are certain to be formed in

any receptacle containing coal oil, benzine, gasoline, and other products of petroleum while in a warm atmosphere. Those who follow these rules will never meet with an accident from the use of lamps or heaters containing oil or gasoline:

1. Never fill a lamp while it is burning.
2. Never fill it after dark, if it can be avoided, and never under any circumstances before an open fire.
3. Never fill a coal oil or gasoline stove while it is lighted by even the most minute flame.
4. Never use either lamps or stoves that are leaky.
5. Never allow the reservoir to become very hot by confining the air about it; the contents may be vaporized by such heat, and the gas be forced out in contact with the flame.
6. Never allow lamps or stoves to become empty while lighted—keep them full; to do so uses no more material, and makes them much safer.
7. Keep the air vents, which all good lamps and stoves possess, open and free from soot, dirt and grease.
8. Do not use glass lamps where little children can get at them.

It is better to be over cautious than by a single act of carelessness cause the loss of a human life, or make a cripple, to say nothing of the loss of property which usually accompanies the accidents here referred to.

Freezing.—It is better to thaw slowly; if possible place the patient, insensible from cold, in a cool water bath; when only a part of the body is frozen, place the affected parts in cold water. Snow may be used to thaw the parts, but if the blood is frozen avoid rubbing the flesh, for the little crystals of ice in the vessels will wound the delicate tissues, and perhaps lead to serious consequences. Increase the warmth slowly. When breathing begins, take the patient from the bath or remove the snow from around the body, wipe it dry and cover with blankets. As soon as he can swallow give warm milk, broth or a hot sling. After immersion in cool bath for fifteen to twenty minutes, if there be no attempt to breathe take him out, wipe dry and practice artificial respiration while assistants slap the feet and hands and rub the limbs to restore circulation. When a small part of the body only is frozen, do not place it in warm water or put hot things about it until the pain which follows warming up has ceased or diminished.

The after-treatment for frozen limbs is the same as recommended for burns.

Prevention of Freezing.—During exposure to severe cold, a feeling of sleepiness means danger. If impossible to reach shelter immediately, look about for a snow drift sheltered from the wind by a hill and crawl into it. This makes a safe shelter from storm.

Sunstroke.—Remove the patient to a shady place, or hold an umbrella over him. Bathe the head with cool water, and fan it to evaporate the moisture; this draws the heat from the brain, and is better than packing it in ice, which tends to drive the blood from the surface in upon the already overloaded brain. If the face is flushed, prop him up in a sitting posture. As soon as the patient can swallow, give cool drinks—but *do not give stimulants*. The patient must avoid exposure to the hot sun until he entirely recovers; if this be impossible, let him wear a light straw hat, that is well ventilated and wet his hair or lay a wet sponge on the top of his head.

Bruises, when not very serious, are cured by binding on a piece of raw beef steak. Change it for a fresh piece twice every 24 hours. Tincture of cayenne pepper (capsicum), painted on with a brush immediately after the injury is received, prevents a bruised spot from turning black. Do not use this where the skin is broken. To alleviate the pain apply cloths wrung out of very hot water, and frequently renew them; sometimes ice-cold water will do better. Uncle Sam's Nerve and Bone Liniment is an admirable dressing, whether the skin be whole or broken. When the injured place has turned black before anything is done, it will turn slowly from black to dingy yellow; this is a necessary step to recovery, and very little can be done to hasten the change except to apply the liniment. In all cases *where the head is bruised avoid stimulants*; apply cold water or ice to stop the bleeding; give plenty of fresh air; prop the patient up, and keep him quiet. Mustard may be placed on the wrists and ankles—but *do not let it blister*. After all injuries to the head that are severe enough to make the patient unconscious, a doctor should be consulted; for we are never certain when we have seen the last of such injuries.

Swallowing Glass.—We give the treatment which saved the life of a child ten months old, who had swallowed some fragments of glass from a broken lamp chimney that it had found on the floor. The same treatment is recommended for pins, or any pointed or sharp

objects that find their way down the throat. In this instance the mother had been in the habit of giving the infant pieces of ice, and doubtless it thought the glass was ice. It was immediately given a dose of castor oil. Flaxseed and slippery elm tea were also given in as large quantities as the child could be persuaded to swallow. A few hours after the first dose of oil, the glass began to pass. A dose of oil was given daily for four days, and more than 70 pieces of glass, varying from $\frac{1}{4}$ to $\frac{3}{4}$ of an inch in length, were collected. At the end of six days no more glass came away, and the child remained well.

Choking.—Examine the throat, and pull out any obstruction by the finger that is within reach. A child may be lifted by the heels, at the same time spatting it between the shoulder-blades. Tickling the throat to excite vomiting will often throw out anything sticking in it. When vomiting fails to drive out the substance, and no medical assistance can be obtained, take a whale-bone, fasten securely to one end of it a piece of sponge the size of a marble; let the patient throw the head well back, put the tongue out, and push the sponge gently down the throat. Fish-bones and pins may be crowded down by swallowing a dry crust or cracker; when they are pushed into the stomach, eat mush or soft bread to envelop them and prevent further injury. Coins seldom do harm unless they are bronze; this material is liable to be partially dissolved by the fluids in the intestinal canal, and give rise to poisoning. A brisk cathartic should be given immediately, to remove it as soon as possible. When objects fall into the air passages, cough and obstruction of breath show that something serious has occurred. Sometimes it may be lifted out by the finger; sneezing will occasionally dislodge it. If there is no snuff to be had instantly, give a pinch of cayenne or black pepper.

Foreign Objects in the Nose.—Let the child take a deep breath through the mouth, then shut the lips, close the free nostril and make an attempt to force the breath through the obstructed nostril—at the same instant spat it on the back. Sneezing will often drive it out. Sometimes, when the object is not very high up, it may be hooked out with a hair-pin. Press the finger against the nose on that side above the object, to keep it from being pushed in further while trying to remove it.

Bites and Stings.—Soda, made into a paste with water, is a good application to relieve pain and swelling. Moist clay or common

mud is good for bee-stings; salt and water also. Uncle Sam's Nerve and Bone Liniment prevents any serious effect.

Mad Dog Bites.—It is the better plan to treat all dog-bites as suspicious. Suck the wound thoroughly, spitting out the saliva, and rinsing the mouth afterwards with carbolized water; next fill the wound with dry salt; this extracts the juices from the flesh and draws the poison with them. While the salt is becoming moist, heat the poker, or any small iron or steel rod, white hot (heat the tine of the carving fork if there be nothing else at hand); wash out the wound, pour on a stream of water to carry off all the salt; then burn it thoroughly to destroy any remnant of the poison. People very often waste precious time in waiting for a doctor; by the time one is found the mischief is done, for the poison has been taken up into the circulation and carried away from the wound, where it can not be reached by any treatment known at present. The accident may occur at a distance from the house, and where nothing can be had until too late, unless the wound be immediately cleaned by suction. In these cases tie a handkerchief about the limb above it, and draw it tight enough to almost stop the circulation—seek help at once.

Broken Bones.—No one ought to undertake the management of broken bones without a surgeon to direct. An improperly united bone not only deforms it, but is likely to injure the joints which connect it with other bones, and to interfere with the action of the muscles attached to it. As these imperfections disable the patient permanently, it makes the one who has managed the case legally responsible for damage done through ignorance. As there are localities where it is sometimes difficult or impossible to procure a doctor's services, we give briefly the method of taking care of broken bones.

The bones of a leg being broken, they may be kept from moving by binding the injured leg to the sound one. This can be done by tying a handkerchief or strip of cloth around both, above the knees, and two more at intervals below. When the collar-bone is broken put the arm in a short sling, supporting the elbow well. When a joint is dislocated do not pull hard upon, or treat it harshly, to return the bone to its socket; there is danger of breaking the bone. A gentle stretching of the muscles, just enough to permit the head of the bone to glide over the edge of its socket, is all that is needed; it will then slip into place. The fragments of a broken knee-cap are kept together

when the patient lies down with the heel raised. Permanent lameness will follow this accident, unless care is used to secure perfect union of the broken fragments. All bones that are drawn apart and displaced must be brought as near together as possible, restored to their natural position, and fastened until Nature has knit the broken ends together.

To Dress a Limb after Replacing a Broken Bone.—Pack the hollows of the limb with cotton batting, lint or oakum, to make a straight surface. Prepare two splints (doctors usually have ready prepared splints to fit all parts), from thin board, shingles, heavy pasteboard, tin, or any material that will keep the limb firmly in place. When one splint only is needed, and a straight one is used, it should be a little wider than the limb. After packing the limb to protect all projecting parts from pressure, lay on the splints, and fasten them in place with a piece of bandage tied around at each end; and, if the splint be a long one, it will need a third piece around the middle. Apply the bandage smoothly, but not tight, as shown in Fig. 23. There must be an allowance made for swelling, which is often considerable. The limb is sometimes badly swollen before any help is obtained, and then nothing can be done for a day or two, until the swelling subsides. Dry or moist heat may be applied to ease the pain, and the injured part must be kept perfectly quiet. It requires from ten to fourteen days for a bone to unite in a healthy person; that is, when it is not splintered or crushed. Unhealthy patients, especially those of scrofulous constitutions, and those who have the bone badly shattered, will be confined to their beds for months. On removal of the splints, the muscles will be wasted and weak; rubbing and kneading them for half an hour daily, using Uncle Sam's Liniment at the same time, will increase their strength rapidly. The patient must be cautious for some time about bearing the full weight of the body upon the limb, until the new bone has become thoroughly hard, so that it will not bend.

Restoration of the Apparently Drowned.—The saving of life, in cases of apparent drowning, depends upon promptness in doing the right thing as soon as the victim is taken out of the water. The time spent in seeking a doctor will usually seal his fate, if nothing be done until the doctor arrives. The air in the air cells, which is only drawn upon when we breathe very deep, is what keeps one alive for some time after having the external air cut off

from the lungs. Were this not the case, life could not be preserved longer than three minutes under these circumstances. Persons who have been under water half an hour have been restored, after showing no sign of life for more than an hour; but in all instances success was due to prompt treatment, began the moment they were brought ashore. Every effort ought to be made to save life by keeping up *artificial respiration* for at least an hour. Two relics of barbarism, still in vogue among the ignorant, ought to be prevented at all hazards—namely, rolling the patient on a barrel, and blowing air into the lungs with a bellows.

The following rules for artificial respiration, are copied from the annual report of the United Life Saving Service, and are of the



FIG. 26.

Showing the first step taken, by which the chest is emptied of air, and the ejection of any fluids swallowed is assisted.

greatest value, not only in accidents from drowning, but in all cases where a patient has been smothered or strangled.

Rule 1.—Loosen the Clothing.—Unless in danger of freezing, do not move the patient, but instantly expose the face to a current of fresh air, wipe dry the mouth and nostrils, rip the clothing so as to expose the chest and waist, and give two or three quick, smart slaps on the stomach and chest with the open hand. If, however, there is reason to believe that considerable time has elapsed since the patient became insensible, do not lose further time by practising Rule 1, but proceed immediately to Rule 2. After loosening clothes, etc., if the patient does not revive, then proceed as stated in Rule 2. (See Fig. 26.)

Rule 2.—Open the Mouth.—If the jaws are clinched, separate

them, and keep the mouth open by placing between the teeth a cork or small bit of wood; turn the patient face downward, a large bundle of tightly rolled clothing being placed beneath the stomach, and press heavily over it for half a minute, or so long as fluids flow freely from the mouth.

Rule 3.—Keep the Tongue from Falling into the Throat.—To produce breathing, clear the mouth and throat of mucus by introducing into the throat the corner of a handkerchief wrapped closely around the fore-finger; turn the patient on the back, the roll of clothing being so placed beneath it as to raise the pit of the stomach above the level of any other part of the body. (See Fig. 27.) If there



FIG. 27.

Showing position and action of the operator in alternately producing artificial expiration and inspiration of air.

be another person present, let him, with a piece of dry cloth, hold the tip of the tongue out of one corner of the mouth (this prevents the tongue from falling back and choking the entrance to the windpipe), and with the other hand grasp both wrists and keep the arms forcibly stretched back above the head, thereby increasing the prominence of the ribs, which tends to enlarge the chest. The two last-named positions are not, however, absolutely essential to success.

Rule 4.—Method of Imitating Natural Breathing.—Kneel beside or astride the patient's hips, and with the balls of the thumbs resting on either side of the pit of the stomach, let the fingers fall into the grooves between the short ribs, so as to afford the best grasp of the waist. Now, using your knees as a pivot, throw all your weight forward on your hands, and at the same time squeeze the waist between them, as if you wished to force everything in the chest upward out of the mouth; deepen the pressure while you can count slowly one, two, three; then suddenly let go with a final push, which

springs you back to your first kneeling position. Remain erect on your knees while you can count one, two, three; then repeat the same motions as before, at a rate gradually increased from four or five to fifteen times in a minute, and continue this bellows movement with the same regularity that is observable in the natural motions of breathing which you are imitating. If natural breathing be not restored after a trial of the bellows movement for the space of three or four minutes, then turn the patient a second time on the stomach, as directed in Rule 2, rolling the body in the opposite direction from that in which it was first turned, for the purpose of freeing the air passages from any remaining water. Continue the artificial respiration from one to four hours, or until the patient breathes, according to Rule 3, and for awhile after the appearance of returning life, carefully aid the first short gasps until deepened into full breaths.

Rule 5.—Promote the Warmth of the Body—Continue the drying and rubbing, which should have been unceasingly practised from the beginning by the assistants, taking care not to interfere with the means employed to produce breathing. Thus the limbs of the patient should be rubbed, always in an upward direction toward the body, with firm-grasping pressure and energy, using the bare hands, dry flannels, or handkerchiefs, continuing the friction under the blankets or over the dry clothing. The warmth of the body can also be promoted by the application of hot flannels to the stomach and arm-pits, bottles or bladders of hot water, heated bricks, etc., to the limbs and soles of the feet.

Rule 6.—After-Treatment.—As soon as breathing is established, let the patient be stripped of all wet clothing, wrapped in blankets only, put to bed comfortably warm, but with a free circulation of fresh air, and left to perfect rest. Give aromatic spirits of ammonia in half tea-spoonful doses, in water; an equal amount of Jamaica ginger, or a tea made by pouring half a pint of boiling water on a tea-spoonful of freshly ground cayenne pepper, or use any other stimulants at hand, every ten or fifteen minutes, for the first hour, and as often thereafter as may seem expedient. After reaction is fully established, there is great danger of congestion of the lungs; and, if perfect rest is not maintained for at least forty-eight hours, it sometimes occurs that the patient is seized with great difficulty of breathing, and death is liable to follow, unless immediate relief is afforded. In such cases, apply a large mustard plaster over the breast. If the patient

gasps for breath before the mustard takes effect, assist the breathing by carefully repeating the artificial respiration.

Clinching of the Jaws not a Sign of Death.—Dr. Labordette, the supervising surgeon of the hospital of Lisieux, in France, appears to have established that the clinching of the jaws and the semi-contraction of the fingers, which have hitherto been considered signs of death, are, in fact, evidence of remaining vitality. After numerous experiments with apparently drowned persons, and also with animals, he concludes that these are only signs accompanying the first stage of suffocation by drowning, the jaws and hands becoming relaxed when death ensues. The *rigor mortis*, or muscular rigidity of death, comes later, after this temporary relaxation. The mere clinching of the jaws and semi-contraction of the hands must not be considered as reasons for the discontinuance of efforts to save life, but should serve as a stimulant to vigorous and prolonged efforts to quicken vitality. Persons engaged in the tasks of resuscitation are, therefore, earnestly desired to take hope and encouragement for the life of the sufferer from the signs above referred to, and to continue their endeavors accordingly. In a number of cases Dr. Labordette restored to life persons whose jaws were so firmly clinched that, to aid respiration, their teeth had to be forced apart with iron instruments.

Hanging.—Upon the discovery of a person hanging, unless the body is quite cold, cut it down at once, remove the rope, strap or whatever has been used to suspend it; loosen the collar, neck-bands and waist-bands, and begin artificial respiration. The ignorant idea that it is not lawful to cut down a body, or remove it from the spot where it is found, until a coroner arrives, has destroyed many a life that might, with timely effort, have been saved. It is a poor reflection upon the manners, not to allude to the kindly feeling of the average by-standers on such occasions, that we have reason for adding the following advice: No person who is entirely sane will resort to hanging as a means of death; it is too uncertain, too painful, and is repugnant to every one in his senses. It is real or imaginary trouble which nerves the unfortunate one to this desperate act. It makes no difference to the poor, bewildered brain whether this trouble be real or imaginary—for the time being it is real enough; therefore, it should be respected by those to whom it has been betrayed by this rash step. In case there are signs of recovery, before consciousness is fully restored, banish all from the room except one or two quiet attendants, and be

sure to send away, out of sight and hearing, any one associated with the trouble that caused the act. Allow no reproaches to be uttered, no expressions of curiosity or astonishment. It is usually better to place the patient under the care of a stranger who possesses the quiet tact to soothe and allay all excitement. The patient ought to be removed from home for a time—a change of scene and surroundings brings a healing peace to an overwrought brain. It is not necessary to inquire too closely into the conditions which have produced the trouble; it is enough that they have brought the patient to this unfortunate pass.

Accidents from Poison.—*Always Send for a Physician; the After-Treatment Requires Special Skill to Save Life.*—The first thing to be done is to remove the poison from the stomach, or to neutralize it. When it has not eaten off the skin of lips and mouth, or, in other words, when the substance swallowed is not a corrosive poison, give an emetic. While waiting for it to be prepared, tickle the throat with the finger to excite vomiting.

Emetics.—1. Stir one tea-spoonful of ground mustard into a pint of warm water; drink it all as quickly as possible. 2. Sulphate of zinc, a level tea-spoonful in a glass of warm water. When these must be sent for, give salt and water, flour and water, milk, etc., to envelop the poison in the stomach and delay its passage out of it, all the time keeping up the effort to induce vomiting by tickling the throat. Ipecac, lobelia, and boneset are too slow in their action. After the stomach is partially emptied give lard, olive oil, white of egg or milk. *When the poison is corrosive*, and has eaten off the skin of lips, tongue and throat, the immediate danger is in destroying the coats of the stomach; and substances to protect the surface, such as lard, oil, etc., must be swallowed before taking an emetic.

Powerful acids, like aqua fortis, sulphuric acid (oil of vitriol), acetic acid, etc., must be neutralized by alkalies. such as magnesia, soap and chalk.

Powerful alkalies, like ley, caustic potash, and ammonia, are neutralized by vinegar and lemon juice.

While waiting for the antidote, or if the nature of the poison is unknown, yet the mouth and throat look raw and burned, give lard, olive or linseed oil, or even castor oil, cream, butter, white of egg, flour and water or milk—the object being to coat the stomach with an oily or pasty substance for its protection.

CLASSIFICATION OF POISONS.

Most articles from which accidents result are named in the following list:

IRRITANT POISONS.	ACIDS.—Sulphuric (Oil of Vitriol), Nitric (Aqua fortis), Hydrochloric (Spirits of Salt), Oxalic, Acetic, Tartaric, and Carbolic.	ANTIDOTES. Chalk, Magnesia, Lime-water, Milk.
	ALKALIES.—Potash (Ley), Soda, Ammonia (Hartshorn).	Vinegar, Lemon Juice, Oil.
	METALLIC.—Arsenic, Antimony, Lead, Nitrate of Silver, (Lunar Caustic), Copper, Paris Green, Corrosive Sublimate, Rough on Rats.	Emetics.
	VEGETABLE.—Aloes, Gamboge, Podophyllin, Blood-root, Lobelia, Poison Ivy, Hellebore, Tobacco, Strychnine.	Emetics, follow by oil or milk. If lips or mouth are raw, give oil, lard or milk, until emetic ready.
ANIMAL POISONS.	OPIATES.—Morphine, Laudanum, Paregoric, Opium. CHLORAL, COCAINE, CHLORDYNE, PRUSSIC ACID, PEACH STONE MEATS, HENBANE, ALCOHOL, BRANDY, WINE, ALL INTOXICANTS.	Strong Coffee. Keep the patient awake. Hold Ammonia to the nose.

POISONOUS VAPORS.	{ CARBONIC ACID GAS. SULPHURETTED HYDROGEN. COAL GAS. CHLOROFORM, ETC.	{ Fresh Air, Artificial Re- spiration.
NARCOTIC POISONS.	{ Mad Dog-bites, Snake-bites, Bee-stings, poisoned wounds. Tainted meat, as bad fish, sausages, diseased pork, beef, game or poultry. Accidental swallowing of Leeches, Spanish Flies.	{ See Special Directions.

Always select the antidote that can be had the most quickly, and use it while waiting for others. Act promptly—a few minutes may destroy all chances.

A *Caution* is necessary in regard to fruit and vegetables growing where poisons are used to destroy worms or bugs. Hellebore sprinkled on currant bushes may adhere to the fruit in sufficient quantity to be dangerous, unless the currants are well washed before eating. Cabbages, and even potatoes, have been known to contain enough Paris green to endanger life.

SPECIAL DIRECTIONS FOR TREATING CASES SUFFERING FROM POISON.

Acids, such as oil vitriol, aqua fortis, spirit of salt, oxalic, acetic or tartaric acids. Mix magnesia with water, as thick as can be easily swallowed. Scrape chalk, or pound it to a powder; take it in the same way. If neither chalk nor magnesia is at hand, take plaster from the wall, pound to fine powder; mix with water and swallow. Other remedies are warm, strong soap-suds, wood-ashes, soda, potash, gruel, linseed tea.

Carbolic Acid.—Give molasses, or sugar, with lime water. If spilled on the skin, cover the place quickly with molasses, sugar-syrup, or moist sugar.

Acid Burns of the Skin.—Any of the acids already named produce serious burns, when spilled on the skin. Cover the parts touched as quickly as possible with a thick paste of magnesia and chalk; *do not wash it with water* until the antidote has had a chance to neutralize the acid.

Alkalies.—Ammonia, soda, potash, ley from leaching ashes. Give vinegar and water, lemonade, sour milk, sweet oil, flaxseed tea.

Arsenic.—Induce vomiting by tickling the throat, placing snuff, salt, or mustard on the tongue, or an emetic, as mustard and warm water, salt and water, etc. Wash out the stomach, if possible. *ANTIDOTE.*—Peroxide of iron, a spoonful for a dose. Iron-rust stirred in sweetened water, flaxseed tea, flour and water, white of eggs beaten up with water, soap-suds, or magnesia in water.

Antimony.—Give strong black tea, strong coffee, tea made with oak bark or tannic acid. Linseed or slippery elm water later.

Lead.—Sugar of lead is the form which suddenly produces dangerous effects. Excite vomiting; then give epsom salts, white of eggs, soap-suds, and milk.

Nitrate of Silver.—Salt in large quantities; follow with flaxseed tea, slippery elm or gum water.

Copper Utensils sometimes poison food prepared or allowed to stand in them several hours. Give milk, white of egg mixed with water; then produce vomiting, and a cathartic to produce purging. Eilert's Daylight Liver Pills are appropriate.

Paris Green.—Treat same as arsenic. Bright green wall-paper and card-board, also some toys, are painted with this; and, if children are allowed to put such things in their mouth, they may be dangerously poisoned.

Corrosive Sublimate is used in solution as a bed-bug poison. Excite vomiting immediately. Give white of eggs, a dozen in a quart of cold water, as quickly as possible. Next in value is molasses or sugar-syrup, starch boiled in water, flour-paste and milk.

Rough on Rats.—Treat like arsenic.

Phosphorus.—Children eat heads off matches. Some kinds of rat paste contains phosphorus, known by the smell and showing light in the dark. *Never give oil, lard, or any kind of grease.* Excite vomiting. Give magnesia mixed with water; slippery elm water, or flaxseed tea.

Aloes, Gamboge, Podophyllin and Blood-root, when taken in over-doses, produce severe pain in the abdomen and other troublesome consequences. If it be discovered at once that an over-dose has been taken, excite vomiting to unload the stomach. If several hours have elapsed, give at once hot peppermint tea with paregoric, or a small dose of laudanum, and keep the patient quiet in bed.

Lobelia causes vomiting, and sometimes dangerous faintness and weakness. Give hot sling, wine, or any kind of liquor in small doses, or five drops of ammonia in water; repeat every ten minutes till better.

Tobacco is extremely poisonous when swallowed. The juice applied to a child's head for an eruption has caused death. If the tobacco has been swallowed, produce vomiting as soon as possible; and, if patient be very weak, give stimulants, strong coffee, few drops of ammonia in cold water, or liquor.

Belladonna, Henbane, Jimson or Jamestown Weed and Hellebore may be treated alike. Excite vomiting, wash out the stomach; give warm water injections to clear out the bowels. After this is done give lime water, a table-spoonful in milk every five minutes, as long as it can be taken; and, under the directions of a physician only, small doses of opium may be given after it.

Prussic Acid, Oil of Bitter Almonds, Laurel Water, Peach Leaves, Peach Kernels.—Remedies must be used instantly, if they are to do any good. Hold ammonia to the nose; mix one tea-spoonful of ammonia with one pint of water; drink as much as possible of this. Dash cold water in the face, and excite vomiting.

Poison Ivy produces an eruption and great swelling of the parts affected. (See Treatment for Poison Sumac.)

Poison Sumac, or *Rhus*, produces a similar effect. Apply over the eruption cloths wet with soft water, containing in each pint either one of the following drugs: One tea-spoonful of aqua ammonia;

one heaping tea-spoonful bi-carbonate soda or saleratus, or the same amount of powdered borax. Change the cloths frequently for twelve hours, and then apply Uncle Sam's Nerve and Bone Liment. Cloths wet in a tea made from lobelia leaves is sometimes useful. *If the seeds are eaten*, produce vomiting, and give strong coffee or other stimulants. After cleaning out the stomach, give a cathartic.

Strychnine.—Excite vomiting by tickling the throat, give mustard and water, or sulphate of zinc, 20 grains in a glass of warm water. Wash out the stomach; then give camphor, ten drops of the tincture in water, every ten minutes, until about five doses are given. If the patient be in spasms when discovered, chloroform held before the nose, so that it can be inhaled, will subdue it, and give a chance to try the other measures advised.

Mushroom Poisoning.—The poisonous effects do not usually show themselves until five to ten hours after the mushrooms have been eaten. Give an emetic, followed by a cathartic; keep up the strength with stimulants. The best stimulant for the purpose is aromatic spirits of ammonia, half a tea-spoonful in a spoonful of water; repeat the dose in fifteen minutes, if the symptoms are very alarming. If the poison begins its work immediately after eating, produce vomiting, and let the patient drink large quantities—a pint or more at a time—of warm water and vinegar to help on the vomiting, and wash out the stomach. A table-spoonful of strong vinegar to a pint of water will be the right quantity.

Opium, Morphine, Laudanum.—Excite vomiting; give large quantities of very strong coffee as soon as it can be prepared. Keep the patient roused—make him walk about incessantly; if he is too far gone for this, spat the feet, rub the limbs, whip the body with switches, and try artificial respiration. If the blood can be kept circulating long enough for the system to get rid of the poison, the patient may be saved. Spatting, switching, moving about, with an occasional trial of artificial respiration, has been kept up for twenty-four hours without ceasing, and the patient saved at last.

Chloral Hydrate.—Vomiting, stimulants, strong coffee and dropping the head lower than the body, to cause a flow of blood to the brain; when the breathing grows faint; try artificial respiration. *Keep the tongue from falling back and strangling the patient.*

Poisoning by Gases.—A person overcome by charcoal or other gas should be taken into the open air, or the doors and windows of the room he is carried to (for he should not be left in the room where the accident happened) should be wide open. Sprinkle cold water on the face, and resort at once to artificial respiration. Do not attempt to give stimulants or anything else until breathing is restored. After he breathes naturally, give strong coffee.

Chloroform.—Lower the head below the shoulders, draw the tongue forward to open the windpipe; practice artificial respiration; open the windows, and let in the air freely. Allow no one near the patient, except those working over him.

Alcohol, Brandy, Whisky, etc.—Give an emetic, or wash out the stomach; pour cold water on the head and spine. Inject into the bowels a pint of cold water containing two table-spoonfuls of salt.

Poisoned Wounds.—An injury produced by a knife or other instrument that has been used on diseased meat, wet with a poisonous liquid, or is foul from any other cause, will be infected, and must receive prompt attention. Cuts from knives employed in skinning dead animals are often very dangerous. Such a wound should be immediately washed out with clean water and cauterized. Nitrate of silver (lunar caustic), crystalized carbolic acid, strong tincture of iodine, a red-hot knitting needle are all efficient cauterizers; select the one that can be had first—for time is an important object in arresting the poison before it is taken into the blood.

Tainted or Diseased Meats.—Fish that has begun to decay is extremely poisonous. The skillful cook can flavor oysters so as to cover all evidence of staleness when they are in a condition unfit for food. Diseased meats, in the form of sausages, or underdone may be eaten without a suspicion of danger. Chickens which feed upon offal—and chickens at best are scavengers—need extra care in cooking to make them wholesome. A chicken cooked in a tightly covered kettle is very poisonous to some people; while, if the same fowl be left uncovered for half an hour after it begins to boil, it may be safely eaten. Owing to these facts, any one is liable to be poisoned by food that appears to be all right when it is eaten. Some hours later vomiting, severe pain in the stomach and bowels, faintness and general distress show that something is wrong. If there is nausea and vomiting give warm water plentifully, with or

without mustard, salt or an emetic, to produce copious vomiting. Also inject into the bowels a pint or more of warm water, containing two table-spoonfuls of common salt. As soon as the vomiting subsides give a cathartic, to remove whatever portions of the food may remain. The after-treatment will be the same as for other diseases with similar symptoms. As a tonic to restore the strength Happy Home Blood Purifier and Health Tonic will prove very acceptable, as it not only strengthens the system, but antidotes animal poisons.

Leeches applied within the mouth have been known to crawl down the throat; also, water containing them has been drunk in the dark. Immediately swallow a quantity of dry salt; then use warm water to induce vomiting.

Spanish Flies, or "*Blister Flies*," have been swallowed by accident or with suicidal intent. Give an emetic immediately; wash out the stomach; give a cathartic, also powdered charcoal and camphor water. After the poison is removed from the stomach, give slippery elm in camphor water—tea-spoonful doses every half hour or hour, according to the severity of the symptoms.

Cocaine being a new remedy, must produce its quota of deaths before the public will learn that every drug which is powerful in allaying pain is dangerous; it is a "two-edged knife, which cuts both ways." This drug ought never to be used except by a physician's prescription and under his oversight. This warning, however, will be unheeded; consequently, instances of poisoning will arise that must be promptly attended to. An antidote is not at present known. Stimulants must be given immediately. Five to ten drops of aqua ammonia in half a glass of water, or, better still, half a tea-spoonful aromatic spirits of ammonia in two table-spoonfuls of water may be given every fifteen minutes, till the patient begins to rally. If the breath fails, try artificial respiration.

To Wash Out the Stomach.—In a great emergency, when it is necessary to send some distance for a doctor, the stomach may be washed out before his arrival, in this way: remembering how a siphon acts, the same principle may be applied in emptying the stomach. Take the long rubber tube from off a fountain syringe; remove the hard metal or rubber pipe, push one end of the soft rubber tube down the throat into the stomach; let the other end project from the

mouth four or five inches. Raise this up—slip a small funnel in it; if there be none in the house, one can be hastily made from pasteboard that will answer the purpose. Pour cool water through it till the stomach and tube are full; pinch the tube tightly together just below the funnel, while still full of water; bend it down over a basin, let the water flow; following it will come the contents of the stomach.

If the flow does not come steadily, either raise the tube, fill again, repeat the manœuvre, or suck the end of the tube to start the flow. "But this is too disagreeable," you say. Well, it is no more than doctors have to do occasionally, and if the life of one of your family is in danger, you should be willing to do the same. When the stomach is cleared out, rinse it again to wash out all the poison possible. *This plan is to be tried only when it is impossible to produce vomiting.*

After the poison is removed, to allay the irritation and prevent inflammation, give slippery elm or gum arabic water for drink, and milk for food. Give no solid food until the stomach has recovered from the accident.

Some Obscure Sources of Poisoning.—There are many ways in which poisons may be accidentally, yet unconsciously, taken into the system. When an unusual disease breaks out in a community, there is always some common source of infection. It may be polluted drinking water; it may be air filled with germs from decaying offal; sometimes the chemicals used in a factory so fill the air as to produce sickness. Lead poisoning produces colic pains, indigestion, palsy, and trembling of the limbs. A number of years ago many people in a neighborhood became ill with dreadful colic, followed by paralysis of the hands. Gradually they became delirious or epileptic, and then died in convulsions. After a long time it was noticed that this disease attacked only those who drank cider. The cider mill was examined, and it was found that, whenever a crack appeared in the presses, it was filled with melted lead. The cider was carried away from the press in lead pipes, and, to make matters worse, a lead weight was put into the cider to keep it from turning sour. Both cider and press were condemned, the people warned, and no more cases of this disease occurred.

Some people are poisoned by sleeping in freshly painted rooms. To remove the poison speedily from such a room, set tubs of water in them over night, and leave the windows open. Water which stands long in pails or reservoirs painted on the inside is unfit to drink or to use in cooking. Painters, plumbers and all persons who handle paint,

solder, or white lead, should wash their hands and faces before eating, and if easily affected by lead rinse them in water made sour by the addition of a little sulphuric acid. They should also drink freely of water containing enough of this acid to make it as sour as lemonade, when there is any reason to suspect that lead is being taken into the lungs or stomach. Quite recently it has come out that bakers, or some of them, in Philadelphia and probably other places, have been using a chromate of lead to color cakes yellow like eggs. Several deaths have occurred from the use of this drug, which has been sold as egg powder.

Copper and brass cooking utensils will poison food left standing in them; they are always unsafe to use unless perfectly clean. Some of the gray marbled iron ware has a large porportion of arsenic in the gray coating. Sour fruit or pickles scalded in such utensils have been made unfit for food, without a suspicion that anything was wrong, until those partaking of them began to show signs of arsenic poisoning. Mouldy bread or flour is unfit for food, yet bakers frequently employ the latter. It produces disordered stomach. Diseased wheat, corn and rye have, when ground into flour, produced epidemics of disease, the cause of which for a long time baffled medical men. In Europe occurred one of the most dreadful examples of this. It was after a bad year, when the grain yield was scanty, food scarce, so that everything was eaten by the poor. At first the toes and fingers would turn black, then fall off; portions of flesh would do the same; the victims wasted away and died a horrible death. It was found out, after a great many had lost their lives, that the bread was made from damaged grain, containing ergot. Green wall-paper, green dresses, and artificial flowers sometimes hold enough arsenic to destroy the health of those who occupy the rooms or wear the articles.

A dressmaker consulted a physician for paralysis of the hands. It was evident she was suffering from lead poisoning—but where did it come from? It was finally traced to the sewing silk, which was heavily weighted with a lead dressing. She had the habit of moistening her thread in her mouth, and in this way absorbed lead.

Poisoning due to Carelessness.—It is criminal to allow packages of poisonous drugs to stand around where they may be taken by mistake, or fall into the hands of children. If it is necessary to have them in the house, let them be labeled in large, plain letters, and let them be placed high up, out of the reach of the most active climber among the little folks. Never, under any circumstances, place them

on the same shelf or in the same cupboard with medicines that any one is taking. It is no uncommon thing to read something like this in the newspapers: "Mrs. Blank went to her cupboard in the dark, selected a bottle, which she believed to contain her medicine, and discovered, on swallowing the dose, that it was corrosive sublimate, prepared for bed-bugs." Change the name of the poison, and this paragraph will describe a remarkably large number of accidents. Physicians know that many cases of accidental poisoning never get into the papers. To save the feelings of the careless author of the accident, the matter is hushed up, and some other cause of death is named to the public. We recollect, at this writing, of three accidents which happened within the short space of three months, and not one of them was ever known outside the immediate family circle. As they illustrate common accidents, and point a moral in each instance, we give them in full, only suppressing such data as would serve to identify the cases.

CASE 1.—Mrs. A. had a bright, mischievous little daughter, a year and a half old. Mrs. A. herself being in poor health, was given some strychnine pills, of which, one, three times daily, was a dose. She kept them, for convenience, in her sewing-machine drawer, along with several other kinds of medicine in pill form. While occupied in preparing supper, the little one climbed upon a chair, pulled out the drawer, and proceeded to play with the pills. After a time her mother was attracted by the child, crying, "Natty, natty!" She ran in and found her spitting out pills; mistaking the sugar-coating for candy, the child had chewed them, and found them not to her taste. The mother, finding the boxes open and all spilled together, hastily gathered them up, took the child away, washed out her mouth, and, concluding that none had been swallowed, went on with her supper. It should be added that the mother did not know what the pills contained, and, consequently, did not suspect that they were poisonous. In a short time the child was seized with a convulsion; a doctor was hastily summoned, and gave an emetic, which brought up a mass of pills, some partially dissolved, and some still whole as when swallowed. It was, however, too late; the poison had done its work, and death followed a short period of agonizing suffering.

CASE 2.—Mrs. L., when her second child was a fortnight old, was brought down stairs to the sitting-room in the morning; being still weak, the noise of the family worried her, and made her very nervous. The little daughter, three years of age, had been suffering from a

severe cough for several weeks, for which she was taking medicine. Just at dusk the mother went to the table on which the medicine bottles were kept, and, selecting the bottle which had formerly contained a cough syrup, poured out the dose. The child refused to take it, and the mother, impatiently seizing her, forced it down her throat; as she did so, she recognized strong fumes of carbolic acid, and knew there was a mistake. She uttered one scream, and fainted. A doctor was brought in, but, in the confusion, some precious moments were wasted before the accident to the child was discovered, and it was then too late to save her. The mother very nearly lost her reason, and it was many months before she was fully restored. How the carbolic acid came to be where it was found, was never satisfactorily explained. Somebody's carelessness was undoubtedly responsible for the accident.

CASE 3.—A lady suffering from a cancer, which was not sufficiently advanced to threaten immediate danger, was using two prescriptions, one internally and the other externally, to cleanse the tumor and hinder its growth. Needing to have both bottles replenished, they were sent to the druggist together. He had been drinking, and his brain, confused by liquor, was incapable of remembering clearly; consequently, he misplaced the labels. The patient took internally one dose of the preparation designed for external use—and died! It is extremely unsafe to patronize drug stores where the prescription clerk is intemperate. No amount of knowledge or skill can withstand the demoralizing effect of liquor. If you have a prejudice against being served with oxalic acid when you ask for epsom salts, or morphine when you want quinine, patronize neither druggists nor physicians who drink intoxicating liquors. In some states the law imposes a heavy penalty upon physicians who prescribe for a patient while they are intoxicated. It ought to be the rule everywhere. Not even the most strenuous advocate of perfect freedom in the matter of using liquor can reasonably object to this.

APPENDIX.

PREVENTION AND CONTROL OF DISEASE.

The Illinois State Board of Health have acquired a national reputation for efficiency in controlling epidemics of disease. They have issued a series of "Preventable Disease Circulars" for the management of *Small-pox*, *Diphtheria*, and *Scarlet Fever*, which ought to be familiar to every family.—therefore, we quote them in full:

THE SICK-ROOM.

The room selected for the sick should be large, easily ventilated, and as far from the living and sleeping-rooms of other members of the family as it is practicable to have it. All ornaments, carpets, drapery, and articles not absolutely needed in the room should be removed. A free circulation of air from without should be admitted both by night and day—there is no better disinfectant than pure air. Place the bed as near as possible in the middle of the room; but care should, of course, be taken to keep the patient out of draughts.

If the room connects with others which must be occupied, lock all but one door for entrance and exit, and fasten to the door frames—top, bottom and sides—sheets of cheap cotton cloth, kept wet with *thymol water*, or chloride of zinc solution—two drachms chloride zinc to a half gallon of water. Over the door to be used, the sheet must not be tacked at the bottom nor along the full length of the lock-side of the frame, but about five feet may be left free to be pushed aside; this sheet, however, must be long enough to allow ten or twelve inches to lie in folds on the floor, and must also be kept wet with the disinfectant.

PRECAUTIONS IN THE SICK-ROOM.

All discharges from the nose and mouth of the patient should be received on rags, and immediately burned. Night-vessels should be

kept supplied with a quart or so of the *Copperas Disinfectant*, into which all discharges should be received. All spoons, dishes, etc., used or taken from the sick-room should be put in boiling water at once.

A pail or tub of the *Zinc Disinfectant* should be kept in the sick-room; and into this all clothing, blankets, sheets, towels, etc., used about the patient or in the room should be dropped immediately after use, and before being removed from the room. They should then be well boiled as soon as practicable.

ATTENDANTS.

No more than two persons—one of them a skillful, professional nurse, if possible—should be employed in the sick-room, and their intercourse with other members of the family should be as much restricted as possible.

In the event that it becomes necessary for an attendant to go away from the house, a complete change of clothing should be made, using such as has not been exposed to infection; the hands, face and hair should be washed in thymol water, or chloride of zinc solution.

MISCELLANEOUS.

No inmate of the house, during the continuance of the disease, should venture into any public conveyance, or assemblage, or crowded building, such as a church or school; nor after its termination, until permission is given by the health authorities.

Letters must not be sent from the patient, and all mail matter from the house should first be subjected to dry heat of 250–260 deg. F.

Domestic animals, dogs, cats, etc., should not be allowed to enter the room of the patient—or, better still, should be excluded from the house.

During the entire illness the privy should be thoroughly disinfected with the *Copperas Disinfectant*—three to five gallons of which should be thrown into the vault every three or four days. Water closets should be disinfected by pouring a quart or so of this disinfectant into the receiver after each use.

CARE AFTER RECOVERY.

There is danger of communicating these diseases directly, from one recovering from them, for at least forty days from the time the first symptoms appeared. In any case a person should not be permitted to associate with others, nor to attend school, church or any public assembly until all signs of disease have disappeared, and the patient is thoroughly disinfected. The body and the hair should be thoroughly washed before the patient is allowed to leave the house. This bathing should be under the direction of the family physician, at such times and in such manner as he thinks prudent. The addition of a gill of thymol water to each gallon of the bath is recommended.

No person after recovering should appear in public wearing the same clothing worn while sick or recovering from contagious disorders until such clothing has been thoroughly disinfected—and this without regard to the time which has elapsed since recovery. The garments worn at the time of being taken ill should be cared for at once, lest others contract the disease through handling them.

DUTIES OF HEALTH OFFICER.

Immediately upon receipt of notice of the existence of a case of contagious disease, the health officer should visit the locality, and secure proper compliance with the precautions above set forth. He should see that the prompt placards are duly posted; should notify the schools; take charge of funerals of those dying of this disease; superintend the disinfection of rooms, clothing and premises; and, finally, give official certificate of recovery, and of freedom from liability to communicate the disease to others. Until these latter are issued, a rigid system of isolation or quarantine should be maintained with regard to an infected house and its contents—persons and things.

Where there is no health officer, the attending physician should see that these precautions are carried out.

DISPOSAL OF THE DEAD.

In the event of death, the clothing in which the body is attired should be sprinkled with thymol water, the body wrapped in a disin-

fectant cere-cloth (a sheet thoroughly soaked in the *Zinc Disinfectant*, *double strength*), and placed in an air-tight coffin, *which is to remain in the sick-room until removed for burial*. No public funeral should be allowed, either at the house or church, and no more persons should be permitted to go to the cemetery than are necessary to inter the corpse.

The health authorities should take charge of burials, and superintend the preparation of the bodies; or, in the absence of such authorities, the attending physician should direct the undertaker as to these matters.

DISINFECTION.

After recovery or death, all articles worn by, or that have come in contact with the patient, together with the room and all its contents, should be thoroughly disinfected by burning sulphur. To do this have all windows, fire-places, flues, key-holes, doors, and other openings securely closed by strips or sheets of paper pasted over them. Then place on the hearth or stove, or on bricks set in a wash-tub containing an inch or so of water, an iron vessel of live coals, upon which throw three or four pounds of sulphur. All articles in the room and others of every description that have been exposed to infection, which can not be washed or subjected to dry heat, and are yet too valuable to be burned, must be spread out on chairs or racks; mattresses or spring-beds set up so as to have both surfaces exposed; window-shades and curtains laid out at full length, and every effort made to secure thorough exposure to the sulphur fumes. The room should then be kept tightly closed for twenty-four hours. After this fumigation—which it will do no harm to repeat—the floor and wood-work should be washed with soap and hot water, the walls and ceiling whitewashed, or, if papered, the paper should be removed. The articles which have been subjected to fumigation should be exposed for several days to sunshine and fresh air. If the carpet has unavoidably been allowed to remain on the floor during the illness, it should not be removed until after the fumigation, but must then be taken up, beaten and shaken in the open air, and allowed to remain out of doors

for a week or more. If not too valuable, it should be destroyed; but, whenever practicable, it should be removed from the room at the beginning of the illness.

After the above treatment has been thoroughly enforced, the doors and windows of the room should be kept open as much as possible for a week or two. Where houses are isolated, articles may be exposed out of doors. The entire contents of the house should be subjected to the greatest care; and, when there is any doubt as to the safety of an article, *it should be destroyed*. All this work should be done—both the disinfection and the destruction of property—under the direct supervision of the local authorities or attending physician.

Such articles as clothing, bedding, etc., as can be washed, should first be treated by dipping in the *zinc disinfectant*; they should then be immediately and thoroughly boiled.

The ticking of beds and pillows used by the patient should be treated in the same manner; and the contents, if hair or feathers, should be thoroughly baked in an oven. If this can not be done, they should be destroyed by fire—as should, in any event, all straw, husk, moss or “excelsior” filling. The clothing of nurses should be thoroughly fumigated and cleaned before it is taken from the house—or, better still, burned, if feasible.

The following list is referred to in the preceding pages, and includes the

BEST DISINFECTANTS.

Sunlight, fresh air, soap and water, thorough cleanliness—for general use.

For special purposes, the following are the most efficient, the simplest and the cheapest:

COPPERAS DISINFECTANT.

Sulphate of iron (copperas).....one and one-half pounds.
Water.....one gallon.

A convenient way to prepare this is to suspend a basket containing about sixty pounds of copperas in a barrel of water. The solution should be frequently and liberally used in cellars, privies, water closets, gutters, sewers, cess-pools, yards, stables, etc.

SULPHUR DISINFECTANT.

Roll sulphur (brimstone).....two pounds.

To a room ten feet square, and in the same proportion for larger rooms.

ZINC DISINFECTANT.

Sulphate of zinc (white vitriol).....one and one-half pounds.

Common salt.....three-quarters of a pound.

Water.....six gallons.

THYMOL WATER.

Made by adding one table-spoonful of *Spirits of Thymol* to half a gallon of water. *Spirits of Thymol* is composed of-

Thymol.....one ounce.

Alcohol 85 per cent.....three ounces.

May be used for all the disinfectant purposes of carbolic acid; it is quite as efficient in the strength here given, and has an agreeable odor. Where thymol is not available, chloride of zinc solution may be used—half an ounce of chloride of zinc to one gallon of water.

STANDARD SOLUTION OF CARBOLIC ACID.

The solutions of carbolic acid sold by druggists vary in strength so greatly that it is almost impossible to prescribe this remedy with accuracy, without seeing the solution to be employed. This difficulty may be overcome, by preparing the acid in the strength needed, directly from the crystals. Procure from your druggist one ounce of solid refined carbolic acid; melt it by setting the bottle in warm water, and pour the melted acid into a clean pint bottle. Fill it up nearly to the top with cold soft water, shake for several minutes to thoroughly mix the contents, and let it stand half an hour to settle, then pour off the water gently, taking care that no globules of acid pass out with it. These directions, carefully followed, will give a clear fluid with no sediment or collection of acid in the bottom of the bottle, which is a five per cent. solution of carbolic acid. This is a *standard solution*, because always of the same strength, and from it can be quickly prepared the lotions for ordinary use. It must be preserved in a colored

bottle, closely corked. In case such a bottle can not be found, paste brown paper around it to exclude the light.

CARBOLIC ACID SOLUTION FOR UNHEALTHY WOUNDS.

A very strong solution, suitable only for cancers and offensive ulcers and unhealthy wounds, is made by diluting the *standard solution* one half with soft water; this contains two and a half per cent. of carbolic acid.

CARBOLIC ACID SOLUTION FOR INTERNAL USE.

Measure out a suitable quantity of the *standard solution*, and dilute with water in the proportion of one table-spoonful of the standard solution to three table-spoonfuls of water. For many purposes it is better to substitute one table-spoonful of winter green essence for one table-spoonful of water.

Dose, one-half to one tea-spoonful, in a table-spoonful of water, for dyspepsia, sore throat, malaria, etc.

Other Uses.—A tea-spoonful in a glass of water is excellent for cleansing the teeth. A table-spoonful or two, in a pint of water will disinfect the hands and remove the odors, unless they are soiled by discharges from the patient, when the undiluted solution will not be too strong to apply directly to them. As a preventive of disease when exposed to contagion, mix half a tea-spoonful, with half a glass of water, and take for a dose twice a day. A table-spoonful or two added to the bath removes the disagreeable odor of fever patients, and lessens that arising from retained excretions.

CARBOLIZED OINTMENT.

Mix ten grains of carbolic acid with one ounce of purified mutton suet.

PURIFIED MUTTON SUET.

Take clean mutton fat, trim off the shreds and skin, chop into fine pieces, and cover it with clean soft cold water; let it come slowly to a boil; remove from the fire and let it cool; skim off the fat, cover again with cold soft water; let it boil, cool, skim; then return it to the fire in a clean basin, and heat until all the water is dried out, taking

care not to let it scorch. This is useful in making many kinds of ointment.

FOMENTATIONS.

The application of cloths freshly wrung out of water, to a limited portion of the body, constitutes a fomentation. The most ordinary place treated by this process is the front of the body, below the breast-bone. This space covers the *stomach*, the *colon*, the *liver*, the *spleen* and the *smaller intestines*, and the *bladder*; but, more important than all, the impression made by a hot or cold application is conveyed directly to that large group of nerve roots, which we have before referred to as the "abdominal brain," shown in Fig. 10, and indirectly through them influences nearly every part of the body. Fomentations are remarkably efficient in giving sleep to the nervous, where opiates and medicines of all kinds fail; they will stimulate the action of the kidneys and bowels; they have been known to arrest the most violent bilious and nervous headaches; they have stopped vomiting and nausea and cured flatulency; they sometimes quiet neuralgia, toothache and paroxysms of asthma. It would be an advantage to every family if water, both hot and cold, were more extensively employed in the minor ailments of every-day life. Unfortunately, the extravagant claims of its first advocates have made it unpopular; but no one at all familiar with its action can have a doubt that water, used sensibly, is a wonderful agent in the removal of disease. *The temperature of the fomentation* is of great importance. All difficulties of the intestinal canal beginning with catarrhal fever or an ordinary cold will be relieved by very hot fomentations; where the difficulty has a nervous origin, as is the case where it follows upon mental anxiety, fright, anger, loss of rest, overwork, etc., warm fomentations are to be preferred. When a hot fomentation produces headache, restlessness, or seems to do harm rather than good, the temperature of the water was too high. Great heat stimulates, moderate heat relaxes; if this be borne in mind, and you know whether you wish to produce the one effect or the other in a given case, you will find no difficulty in selecting the suitable temperature for the fomentation. This should be

measured by a thermometer, the hand can not be relied upon as a guide.

Cautions Regarding the Application of a Fomentation.—The patient should lie down, and ought to sleep after this treatment; extra care must be used afterward to prevent taking cold. A fomentation ought never to be applied within at least two and a half hours after eating, as it will interfere with digestion if given sooner. They appear at first to weaken the patient, because they remove excitement (which has given a false appearance of strength, and which, unrelieved, will rapidly exhaust him), and throw him upon his actual resources of strength, which are apt to be less than he supposed. They improve all the nutritive processes, and therefore strengthen in the only way that can prove permanent.

Method of Giving a Fomentation.—Fold a piece of flannel to make three or four thicknesses, and large enough to cover the whole abdomen; place it in a dry basin, and pour enough boiling water over it to saturate it. Wrap the flannel in a dry towel, and twist the latter until the water is nearly all pressed out of the flannel, and it remains only *damp*; lay this, as hot as it can be borne, upon the dry skin and cover with dry flannel; cover the patient with the ordinary bed clothing. In five to ten minutes prepare another hot flannel pad in the same way as at first, and when ready remove the one on the patient and apply the last. As soon as relief follows, place a dry hot flannel over the abdomen, cover the patient carefully, and keep him quiet until he sleeps.

WET PACKING.

This is understood to mean the application of a sheet freshly wrung out of water to the whole body. Most people regard it as an ordeal more to be dreaded than the disease it is expected to cure—yet undoubtedly it is capable of doing great good in many cases of illness. Weakly persons ought never to begin treatment too energetically. Partial packing is preferable for them at first. It may be begun in this way: Wring a towel out of water raised to a temperature of 80° to 90° (you will remember the heat of the human body is naturally 98½°), and

place it over the front of the body; cover with dry towels or a folded sheet. If they are able to warm this without producing a chill, the next day apply two towels—one to the front, the other to the back—and gradually lead the patient on until a wet sheet, which envelops the entire body, can be borne without disagreeable sensations following. Later cooler water may be used, but the temperature ought to be lowered very gradually where the patient is feeble and bloodless. It is better to pack the body only, in those who have poor circulation through the extremities, until they have become accustomed to the treatment, and are known to be benefited by it. The wet pack is an excellent remedy in bilious, intermittent and continued fevers; also, when there is inactivity of any of the important excretory organs, and to remove blood poisons from the system. Those subject to asthma, as well as those liable to attacks of palpitation of the heart, ought to have a dry towel placed over the heart and lungs before being wrapped in a wet sheet.

The Time to Remain in the Wet Pack.—This depends upon the length of time it requires to become warm in it. If the patient does not feel thoroughly warm for forty minutes or more, it is advisable to leave him in it from an hour and a quarter to an hour and a half; but if he becomes warm in ten to fifteen minutes, he should not remain in the pack longer than one hour. Headache, faintness, or dizziness show that the pack has been too greatly prolonged.

POULTICES.

These applications are made for the purpose of softening the skin, for stimulating it, to retain heat, and to relieve pain. Bread and milk make a good poultice, but it should not be kept on too long; it soon becomes sour, and is then irritating, because filled with bacteria, and, like fermenting milk, is liable to contain the deadly poison known as "ptomaine."

FLAXSEED POULTICE.

This is made by pouring boiling water into a clean basin, and stirring in linseed meal until thick enough. Spread it not less than one inch thick on soft, clean cotton, and grease its upper surface with unsalted lard to keep it from sticking.

INDIAN MEAL POULTICE.

An Indian meal poultice may be made in the same way. It retains heat better when lightly baked like a pancake, and should be an inch and a half thick.

BRAN POULTICE.

Make a flannel bag large enough to cover the surface to be poulticed; fill it conveniently full, and sew it up. Place it in a steamer, and let one side become as hot as can be borne, and apply that side of it to the diseased spot.

HOP POULTICE.

This is made similarly to the preceding, and it is thought to ease pain.

POPPY POULTICE.

Pour a pint of boiling water over a handful of dry poppy pods, and thicken with linseed meal, powdered slippery elm bark, or Indian meal. Spread it on clean linen, and apply it hot for the relief of neuralgia, toothache and rheumatic pains.

CHARCOAL POULTICE.

Take of wood charcoal half an ounce; bread crumbs, two ounces; linseed meal, one ounce and a half; boiling water, ten fluid ounces. Soak the bread in the water until soft; add the linseed meal gradually, and stir the ingredients all together to make it a soft mass.

ICE POULTICE.

Spread a layer of dry linseed meal on a suitable cloth an inch thick; on this, at intervals of an inch, lay pieces of ice the size of a marble; cover with another cloth, folding the edges over to keep the melted ice from running out. Sometimes used to diminish the heat in intense inflammation.

MUSTARD PASTE.

Mix mustard with cold water to the consistency of putty; spread it about $\frac{1}{8}$ inch thick on brown paper or cloth; cover with a piece of tarleton or net, and apply until the skin is reddened.

COOLING APPLICATIONS.

It is sometimes necessary to apply cooling lotions to reduce the great heat present in severe inflammation. The ice poultice described

above is one mode of applying cold. Ice may be inclosed in a bladder, in a rubber bag, or be wrapped in a gossamer cloak to keep the bedding dry. Sometimes ice can not be had, then an *evaporating lotion* will be beneficial. A single piece of linen may be dipped in water or other liquid, and laid on without other covering; as the water evaporates, sprinkle the linen to keep it moist. *Irrigation* is sometimes needed for broken or amputated limbs. A pail of water may be hung above the bed with one end of a towel fastened to it, and the other arranged to allow the water to drip upon the part to be cooled. A rubber cloth placed beneath the limb receives the water, and conveys it into a receptacle at the bedside. A fountain syringe can also be arranged for the same purpose.

DOSES OF MEDICINE.

SIZE OF DOSE MUST BE ADAPTED TO AGE OF PATIENT.

The majority of medicines have the dose named for persons 21 years of age, and from this the quantity for the young and the aged is to be estimated. The proportion is, viz:

Children	2 years old	requires	$\frac{1}{4}$	of an average dose.
"	4	" "	$\frac{1}{4}$	" "
"	8	" "	$\frac{2}{5}$	" "
"	12	" "	$\frac{1}{2}$	" "
Adults	21	" "	full dose	
"	70 or over	"	$\frac{1}{2}$	"

The last named varies with the strength of the patient; vigorous old people may take nearly a full dose, while those who are very feeble need even less than we have named.

TO DISGUISE THE TASTE OF DISAGREEABLE MEDICINES.

Chew some strong, aromatic substance, or something that makes a powerful impression on the sense of taste; then swallow the medicine immediately. Orange or lemon peel in this way disguises the taste of castor oil. Liquorice diminishes the taste of bitters.

OLD BOTTLES.

Every housekeeper should see that all bottles of medicine prescribed for a particular illness are emptied when no longer needed.

Medicine soon deteriorates; therefore, it is not advisable to keep it for another time—besides, poisonous solutions are liable to be left where they will lead to serious mishaps. All bottles should be cleaned before being set away; they clean easier then, and are ready when wanted. *To clean them*, place them in a kettle, sprinkle over them a handful of wood-ashes, or add a small quantity of ley, or sal soda and cover with cold water; set them over a fire; let them boil, and then remove, and when cool enough rinse and drain. Substances which adhere may be scoured off by coarse sand and strong soap suds; fill the bottle about half full, and shake it hard; sometimes shot will do better than sand.

CONVENIENT MEASUREMENT.

It is often necessary to measure medicines with spoons, in the absence of graduates or measuring glasses. The following estimates are not accurate, but are sufficiently near to answer, except for poisonous drugs:

A tea-cup		contains about four fluid ounces, or a gill.
A wine-glass	“	“ two fluid ounces.
A table-spoon	“	“ half a fluid ounce.
A small tea-spoon	“	“ a fluidrachm.
A large tea-spoon	“	“ two fluidrachms.

ROOT AND HERB TEAS.

Nearly all roots and herbs are injured by long boiling. As a rule, one ounce of the herb or bruised root to one pint of water makes the tea of suitable strength. Place the former in an earthen or stone jar; pour over it the water heated to the boiling point; cover closely until cool, and then strain.

SYRUPS.

Many families are accustomed to prepare some favorite remedy in the form of a syrup. This will keep well when made according to these directions: Cover the barks or roots with water, and let them stand over night—or, in case they are very dry, a day or two will not be too long. Drain off the fluid and add granulated sugar in the proportion of six pounds to the gallon. Let it boil until the sugar is com-

pletely dissolved, which will be within five minutes after boiling begins; remove from the fire, and strain through clean canton flannel previously wrung out of boiling water; scald out the bottles, and fill while hot; use clean corks, and keep the bottles closed.

COMPOUND SYRUP OF RHUBARB.

This valuable syrup is a household remedy that any one may prepare. It is excellent for diarrhoea, sour stomach, loss of appetite, catarrh of stomach, and is especially adapted to such cases as Happy Home Blood Purifier and Health Tonic fails to benefit.

Take of the best rhubarb, finely powdered, a half ounce; carbonate potash, a half ounce; golden seal and cinnamon, crushed or powdered, one-fourth ounce; granulated sugar, one and a half pounds; water, one quart; oil peppermint, five drops.

Place the rhubarb, potash, golden seal and cinnamon in a stone jar; pour over them one quart of boiling soft water. Let them stand twenty-four hours, then drain off the liquid; the best way to do this is to pour the mixture into a pointed bag and hang it over a clean earthen jar until it ceases to drip; then pour over the dregs a coffee-cupful of boiling water, let it drain off, mix with the first portion, and set it over the fire; add the sugar, and as soon as melted it is done. Rub the peppermint into a tea-spoonful of sugar until thoroughly mixed and stir into the syrup, after removing it from the fire. Add water, if necessary, to make the syrup measure one quart. Have ready some clean bottles, scald them and fill with the hot syrup; cork and set away until needed.

LIME WATER.

Lime water is very easily made, and ought to be kept in every family. It is one of the best remedies to allay nausea and vomiting; for this purpose it may be mixed with milk. Mixed with linseed oil or sweet oil, it makes an excellent remedy for burns; heated and sprayed into the throat, it removes false membranes; the fumes of slacking lime are better for this purpose.

To Prepare Lime Water.—Select a pound or more of unslaked lime;

place it in a stone jar, and pour over it a gallon of clean, cold water. When the lime is slacked, stir the mixture, and add water enough to make it of the consistency of thin cream; bottle, cork and set away. The lime will settle, leaving a clear fluid on top, which is to be drawn off as needed; do not shake it up before pouring out a dose.

INVALID DRINKS.

Pure cold water affords, in the majority of cases, the most desirable drink for invalids. Where there is reason to suspect that the water may be contaminated, it should be boiled before using. It is claimed that the Chinese, with their pestilent native habits, would have been swept out of existence long ago, were it not the universal custom to drink tea instead of the unboiled water of their polluted rivers and springs. Occasionally, a patient craves some other drink than simple water; therefore, we give a few recipes for other refreshing beverages.

TEA FOR INVALIDS.

Select tea of good quality, and put a tea-spoonful, if but a single cup is wanted, in a dry, clean tea-pot; let it stand on the back of the stove or in the oven until the tea-pot is hot, but do not scorch the tea; then pour on a little more than a cup of boiling water; let it stand five minutes, and it is ready.

ICED TEA.

Prepare in the same way, and within ten minutes after the boiling water is poured on strain it off the leaves, and set it aside to cool. In using it fill a tumbler half full of broken ice; fill up with tea, and sweeten to taste.

COFFEE.

This is a refreshing beverage for invalids, when the nature of their disease does not forbid its use. Coffee should never be purchased ground, as it loses its flavor very rapidly. Roasted coffee in the berry is good when fresh, but it rapidly deteriorates; therefore, those who wish to secure the delicate aroma in its perfection will do well to roast it at home, and in small quantity at a time. It may be heated in a frying-pan in the oven, or on the stove; it ought to be roasted quickly, and

when of a bright brown it is done; stir constantly, and pick out any grains that are of a dull black. A bit of melted butter beaten with white of egg, stirred in the moment it is taken from the fire, gives a glazed coating to the berries and tends to preserve the flavor.

To Make a Cup of Coffee, prepare a small flannel or cotton bag of loose material: place in it one heaping table-spoonful of very finely ground coffee. Let the coffee-pot be warm; throw the bag into it, and pour on two cups of boiling water. Set it where it will boil for ten minutes; remove from the fire; pour in a table-spoonful of cold water to settle, and it is ready. Let the coffee-cup be warm, also the milk or cream; put the sugar and cream in the cup and pour on the hot coffee, filling it a little more than two-thirds full. Do not fill any cup or glass full enough to slop over as it is carried; it gives it an untidy look, offensive to many persons.

EGG MULLED IN TEA OR COFFEE.

Beat the yolk of an egg very well in a cup; stir in a little milk or cream; then pour on it, stirring it all the time, hot coffee or tea to fill the cup. If poured on too hastily, the egg will curdle, and it must be thrown away. This is excellent for a morning stimulant for those who can not eat any breakfast.

PLAIN CHOCOLATE.

Scrape one ounce (one of the small squares) of chocolate, fine; add to this two table-spoonfuls of sugar, and put into a small sauce-pan with one table-spoonful of hot water; stir over a hot fire for a minute or two, until it is perfectly smooth and glossy; then stir it all into a quart of boiling milk, or half milk and half water; mix thoroughly and serve immediately. More or less chocolate, milk and sugar may be used, to suit the taste. Made in this way, it is free from oily particles; when allowed to boil after the chocolate is added to the milk, it becomes oily and loses its fine flavor.

EGG CHOCOLATE.

Dissolve one cake of chocolate in one cup of boiling water; beat the yolk of an egg to a foam in a bowl, and pour the chocolate slowly

over it, stirring constantly all the time; add cream or hot milk and sugar to suit the taste.

FROTHED CHOCOLATE.

One cup of boiling water; 3 pints of fresh milk; 3 table-spoonfuls of Baker's chocolate, grated; the whites of 5 eggs, beaten light; two table-spoonfuls of sugar, powdered fine for the froth. Heat the milk to the boiling point; mix up the chocolate with the boiling water, and stir into the hot milk; let it simmer gently for ten minutes, and stir frequently; boil up once briskly; take from the fire, sweeten to taste and stir in the beaten whites of two eggs, unsweetened. Pour into a heated pitcher, from which it is to be served; have ready the remaining whites whipped up with the powdered sugar, and place a spoonful on each cup as it is served.

BREAKFAST COCOA.

Into a breakfast cup put a tea-spoonful of powdered cocoa; add a table-spoonful of boiling water and mix evenly; then add equal parts of boiling water and boiled milk, and sugar to taste.

COCOA SHELLS.

Take two ounces of cocoa shells; pour over them three pints of boiling water; boil for thirty to forty minutes; let it settle, and strain; then add cream, or boiled milk, and sugar at pleasure.

CORN COFFEE.

Parch a coffee-cupful of common field corn to a light brown color. Pour over it one pint of boiling water; let it stand where it can steep for half an hour; then pour it off, and drink it very hot. This is excellent for nausea. Where taken as a substitute for tea or coffee, it may be seasoned with sugar and cream.

TOAST WATER.

Toast two or three slices of light bread until perfectly browned without burning; cover them with boiling water, and let it stand fifteen minutes if wanted hot—otherwise, until cold. Strain off the water, at the same time pressing it out of the bread. Flavor to suit the taste.

OATMEAL WATER.

Stir one table-spoonful of oat meal into one pint of cold water; let it stand two hours in a cool place; then drain off as wanted.

TAMARIND WATER.

Pour one pint of boiling water upon one ounce of tamarind pulp in an earthen bowl; keep it hot for half an hour; let it cool—strain and sweeten to taste. This is a laxative, cooling drink, suitable for fever patients.

JELLY WATER.

Take one tea-spoonful of any kind of jelly preferred; stir it in a glass of ice-water until dissolved; then give as much as the patient will drink. It is much liked by fever patients.

LEMONADE.

Roll the whole lemon upon a clean board, at the same time pressing it hard until it is very soft. Place two table-spoonfuls of granulated sugar in a glass; cut the lemon in half, and squeeze the juice upon the sugar; throw away the lemon when all the juice is pressed out. Fill the glass with cold water; stir the ingredients until the sugar is dissolved, and it is ready. More or less sugar may be added, and bits of ice if desired. Ice for invalid drinks is nicer when shaved off, instead of broken into bits.

RASPBERRY LEMONADE.

Roll a lemon until soft; slice it into a pitcher or large bowl; add one table-spoonful of red raspberries and two table-spoonfuls of loaf sugar. Grind all together, using a potato-masher, if nothing better can be found. Cover with one pint of water, and let it stand five minutes; stir it again, and then strain through cheese-cloth. Ice and more sugar may be added to suit the taste. Strawberries or any other fruit may be substituted for raspberries.

FLAXSEED LEMONADE.

Put four table-spoonfuls of whole flaxseed in an earthen pitcher, and pour upon it one quart of boiling water; cover, and let it stand two or three hours; then strain, add the juice of two lemons, and

sweeten. If too thick, add cold water. It is excellent for sore throat and hoarseness.

PARCHED FLAXSEED.

A tea made according to the preceding recipe, omitting the lemon juice and using flaxseed, parched like corn, is excellent for removing dropsical swellings.

MULLEIN TEA.

Consumptives and other suffering from a dry throat, with tickling sensation, which keeps up a cough, will be greatly relieved by drinking freely of a tea made by boiling one large mullein leaf in one quart of milk for half an hour. Strain, and when cold it is ready for use.

LIQUID FOODS FOR THE SICK.

Many forms of illness require a liquid diet for a time, and this will call for some ingenuity on the part of the nurse to make it acceptable. There are three points to be strictly attended to: 1. Soups, broths, etc., to be given warm must be served *hot*; in cold weather the cup or bowl ought to be filled with boiling water, until the moment it is needed. 2. Those which are to be taken cold should have all grease removed, and be set on the ice until wanted; when there is no ice, set the bowl in cold water. 3. Fill the dish only two-thirds full, and have the outside clean; serve on a tray or a plate covered with a clean napkin, with the spoon *beside*, not *in*, the food. *Never taste it in the presence of the patient.* Should the necessity arise for doing this, fill the patient's spoon from the cup and pour into another spoon, from which it is tasted; carry the latter spoon out of the room after using it.

MILK.

The majority of patients will thrive better upon a milk diet than on any other that can be selected. There is a right and a wrong way to serve so simple a food as milk. It ought to be fresh and perfectly sweet. Milk designed for infants and invalids (as well as for the family) ought to be kept in a clean place. The hands of the milker and the cow's teats must be clean—otherwise, the milk is tainted at the start. Disease often sharpens the taste, making the odors of the stable

perceptible when those in health can not detect them. It should be served in a clean glass, on a tray or plate. When the physician orders lime water, or any other medicine mixed with it, keep it from the knowledge of the patient if possible. One or two table-spoonfuls of lime water is enough for one glass of milk. Should magnesia be given stir it into the milk, and let it settle a moment; then pour off into a clean glass—otherwise the sediment will be noticed, revealing to the patient the fact that the milk is medicated. Do not give too much milk at a time. A large glassful is all that will be relished, and more may form too much curd for a weak stomach to dispose of easily. This quantity may be repeated every three hours. Sometimes it agrees better to be given very hot; raise quickly to the boiling point—do not boil; pour into a hot cup, and sprinkle with pepper when it is liked.

MILK AND EGG.

Beat the yolk and white of a fresh egg separately; mix the yolk with one table-spoonful (more or less, according to taste) of granulated sugar in a goblet; fill up a little more than half with rich, sweet milk, with a spoonful of shaved ice when convenient; stir thoroughly, cover with the white beaten to a stiff froth, season with nutmeg or very thin slices of some fruit jelly and take immediately. This is nourishing for feeble patients.

BUTTER-MILK.

Iced butter-milk is sometimes relished by fever patients. It ought to be fresh, and not more than a day or two old. Dyspeptics can occasionally subsist on butter-milk when everything else causes distress. An old and highly recommended diet for consumptives, troubled with indigestion, is butter-milk sweetened with maple sugar.

KUMISS.

Select strong bottles that will hold about a quart, and fill with new milk two parts; cold, soft water, one part; put one-fourth of a cake of yeast in each bottle. Cork, and tie the cork firmly in place. Let them stand for twelve hours where the temperature is about 70°; then set them on ice or in a cool place. Be careful in removing the cork, or

the contents will escape with great force and be wasted. The curd should be in small flakes; when in a solid mass, it is unfit for use. This is sometimes called "champagne milk," and is more stimulating than milk in any other form.

RENNET.

Pepsin, pancreatin, and other preparations of the digestive principles obtained from animals may be purchased of your druggist. They are demanded when the digestive fluids are not perfectly prepared, in consequence of some of the organs concerned in their production being diseased. Rennet, prepared according to the following directions, is a good substitute for pepsin, and costs considerably less.

To Prepare Rennet.—Clean the stomach of a calf as soon as killed, scouring inside and outside with salt. When perfectly clean, tack upon a frame to dry in the sun for a day. Cut in small squares, and pack away in salt. When needed, soak one or more of the pieces half an hour in cold water; wash well, and put it into the milk or other food that is to be prepared for digestion. Tie a string to it, that it may be drawn out when its work is done.

INGLUVIN.

The inner lining of a chicken's gizzard, washed clean, dried and powdered, is sometimes beneficial in dyspepsia. It is now prepared on a large scale, and is for sale under the name of ingluvin. The dose is the quantity that can be heaped upon a dime, taken immediately before eating, at each meal.

PARTIALLY DIGESTED MILK.

It is sometimes necessary to prepare milk for the stomach to lessen the work required of it. Insert the rennet as described above, and when the milk begins to thicken take it out. *Do not wait for the curd to separate*, but give immediately.

FLOUR GRUEL FOR DIARRHŒA.

Tie up one pound of flour in a cloth, and place in a sauce pan of cold water; boil four or five hours steadily. Take it out of the cloth and dry in a warm oven, or in the sun; grate off one table-spoonful

at a time for a coffee-cupful of milk and water (equal parts). Wet the grated flour with a little cold water—let the milk and water boil; then mix it in, and add a little salt. In five minutes it will be ready. This is very valuable for children suffering from summer complaint.

OATMEAL GRUEL.

Sift one heaping table-spoonful of oatmeal slowly into one pint of boiling water, stirring it all the time. Let it boil at least two hours, adding hot water as needed. Strain through a sieve. This is the basis of foods of great value for cases of constipated habit, and for infants with whom milk alone disagrees. It may be prepared in several ways: 1. Beat a fresh egg, and pour slowly upon it while stirring constantly, the gruel raised to the boiling point. Season with salt and pepper. 2. Mix two-thirds gruel with one-third fresh cream, and sweeten with powdered sugar of milk. An excellent food for wasting diseases of childhood unaccompanied by diarrhoea. 3. Mix equal parts of this gruel and fresh milk; sweeten with granulated sugar.

INDIAN MEAL GRUEL.

Place one tea-spoonful of salt, a bit of butter the size of a small hickory nut, and a pint of water in a clean basin or frying pan over the fire. Raise to the boiling point, and when bubbling briskly slowly sift in one heaping table-spoonful of yellow corn meal. Continue to stir for half an hour; then set it back where it will gently simmer for another half hour. Add boiling water to supply the loss from evaporation. Properly made, it is smooth and free from lumps. If butter is objected to in the seasoning, omit it and add a table-spoonful of thin cream to a coffee-cup of gruel just before serving. This is very grateful to the stomach, and is usually well borne after severe vomiting.

BEEF TEA.

Select a pound of lean beef; remove all fat, gristle and bone. Chop it fine, put it into a stone or earthen jar; pour over it half a pint of cold, soft water, containing ten drops of dilute hydrochloric acid (to be had from your druggist), and let it stand one hour. Press out all the juice, and set it aside; pour over the meat another half-pint

of cold water, and set over the fire to boil. At the end of an hour strain it through a sieve; mix the two portions of liquid; return to the fire in a stone jar; bring to a boil, and serve hot with salt and pepper to taste—if permitted by the medical adviser. This beef tea may be served cold, in which case it is not heated after mixing the two portions. The fragments of meat are thrown away. This tea is an excellent nerve stimulant, but contains very little nourishment. A patient would starve fed on it alone.

BEEF ESSENCE.

Prepare the beef as for tea, but use no water. Place the chopped beef in a strong bottle; cork firmly, and set it in a kettle of warm water. Let it boil not less than six hours; remove the contents of the bottle; press out all the juice, and dry the remnants of meat in an oven, taking care not to burn them. When dry, pound them very fine, or grind them to a powder in a coffee-mill, and mix with the juice. This is very nourishing and very strong; the patient can take but a little at a time. It is to be selected when, for any reason, milk can not be taken.

MUTTON BROTH.

Boil a piece of mutton until it will fall from the bone; drain off the broth; let it stand until cool; skim off the fat; salt it and heat it. *Veal* and *Chicken* broth may be made the same way. Boiled rice, barley or vermicelli may be added to it, to make a variety. A little ingenuity in seasoning it differently will make it more attractive to a patient compelled to subsist almost entirely on liquid food.

CALVES' FEET BROTH.

Boil two calves' feet in two quarts of water until they are in shreds. Strain off the liquor; salt to taste, and set away until needed. To prepare for eating, take one coffee-cupful of the broth, raise it to the boiling point; beat one egg and stir into it two table-spoonfuls of sweet milk; pour over it the boiling broth, stirring rapidly to keep the egg from curdling. A little pepper improves it. Serve with toast.

OYSTER STEW WITHOUT MILK.

To one pint of oysters, including juice, add one pint of cold water; stir together, drain off all the liquor, and place it in clean frying pan or basin over the fire. Season with salt, a lump of butter the size of a walnut, and thicken with cracker dust or crust powder; a tea-spoonful moistened with water will be enough. As soon as the liquor boils add the oysters; let them boil up once, and serve. This stew may be varied by using half the quantity of water, and by seasoning with cream when butter disagrees.

OYSTER SOUP.

Take one pint of water, half a pint of milk, a table-spoonful of the best butter, two crackers rolled very fine, half a tea-spoonful of salt, and pepper to season. Mix all together, and bring to the boiling point over a quick fire; then add one pint of oysters. Remove from the fire as soon as it begins to boil, and serve immediately.

MOCK OYSTER SOUP.

Wash and clean salsify or "vegetable oysters;" slice them cross-wise into pieces about half an inch in length, and boil in water until tender. Drain off the water and mix with it half as much milk; salt, pepper, etc., using the same proportions as in the last recipe; when it boils, stir in a tea-spoonful of corn starch moistened with milk; add the salsify; let it remain over the fire two or three minutes, or until it boils briskly; remove and serve.

VARIOUS FOOD RECIPES.

The secret of success in providing the sick with a diet that is easily digested and at the same time sufficiently nourishing, lies in giving only one thing at a time, and in not giving the same article twice in succession. When more is prepared than is wanted for one meal, set what is left away where it will keep until next day; if it can not be kept, then dispose of it in some other way; do not insist upon the patient eating it. This does not hold true of liquid foods. Patients dependent upon them are seldom in a condition to notice particularly

what they are taking; but even then it is desirable to vary its appearance as much as possible, to make it more tempting. Do not give sick people *pickles*, piquant sauces, such as *Chili sauce*, etc., nor highly seasoned food. These articles are apt to interfere with the action of medicines, when they do not seriously irritate the digestive organs.

PANADA.

Select any good crackers to fill a large coffee-cup. Oyster crackers will not need to be broken. Sprinkle a table-spoonful of granulated sugar over them, also a little salt, and cover with boiling water. Cover the cup, and let it stand for an hour, or until the crackers are clear and soft as jelly. It may be flavored with nutmeg. Currant jelly may, for a change, be used to flavor it.

PEPTONIZED BEEF.

A very nourishing food for those who are extremely weak and exhausted may be prepared as follows: Chop lean, fresh beef very fine, or scrape it with a dull knife into shreds. To one pound of such meat, free from fat or gristle, add half a pint of soft water, one tea-spoonful of dilute hydrochloric acid, and one square of rennet. Place the whole in a stone or earthen jar, and keep it at about 120° for six hours, or until nothing but the fibers of beef remain. Strain through cheese-cloth, press out the juice; let it cool, and give it to the patient every three hours until all is taken. A little salt may be added, also pepper, if desired.

MEAT PASTE.

Take a small piece of raw, lean meat, beef, mutton or chicken. Shred as fine as possible, and rub through a sieve to a smooth paste. Mix a piece the size of a pea with cream and sugar. Give frequently, in cases of great exhaustion from diarrhoea or hæmorrhage. It may be given in a sandwich, between two very thin layers of bread or toasted cracker.

SOFT BOILED EGGS.

Put the eggs in a sauce-pan containing enough boiling water to cover them. Let it stand where the water will keep hot, but *not* boil, for ten minutes. This cooks both white and yolks, but not too hard.

In taking them out, be careful not to break them; trim off the edges neatly, and season with salt and butter.

SOFT BAKED EGGS.

Heat an earthen pie-plate hot—grease it with good butter; break the eggs and drop them on the hot plate, taking care not to break the yolk. Set them in the top of the oven, and watch them until they become whitened over the top; take the plate out of the oven, and immediately remove the eggs to a small, warm plate or saucer, from which the invalid may be served.

CHICKEN JELLY.

Cut up a whole chicken into small pieces, and break the bones; put all together in a stone jar; pour one tea-cup of cold water over it; cover closely—boil nine hours. Strain through a sieve, salt it and let it cool; skim off the fat, and it is ready to be eaten. It may be placed between two slices of bread to make sandwiches.

CURDS AND CREAM.

Put one spoonful of prepared rennet in a quart of new milk; line a basin with a large piece of cheese-cloth, and pour upon this the prepared milk. As soon as the curd forms, gather up the edges of the cheese-cloth to make a loose bag, and hang it up to drain the curd. When drained put it in a dish, which may be set in cool water or on the ice. Serve it with sweet cream and powdered loaf sugar. Some like to have it flavored with nutmeg.

TWO WAYS OF COOKING ASPARAGUS

1. Wash, clean and cut off all tough parts. Boil in salted water until tender. Prepare some thin toast; soften it with the water in which the asparagus is boiled; spread lightly with butter, and place the asparagus on the toast, which must be seasoned with butter and pepper. Serve hot.

2. After cleaning and trimming, cut the bunch across at intervals of half an inch to divide each stalk into small pieces; cover with cold water, and boil till tender; let the water nearly all boil away; then add enough milk to cover the asparagus, a piece of butter the size of a

hickory nut, and salt to suit the taste. Some prefer to thicken the milk a little; a level tea-spoonful of corn-starch moistened with milk stirred in, without lumps, will make it thick enough.

BOILED RICE.

Pick over a tea-cupful of rice, wash, and put it into a large cheese-cloth bag. Have ready a kettle of boiling water containing a heaping tea-spoonful of salt to each pint. Place the bag of rice in the kettle, and see that there is enough water to cover it. A large spoon laid in the bottom of the kettle keeps the bag from sticking to it. Boil briskly for half an hour; take out the bag, drain it and turn out the rice. Properly done each grain is large, soft, but distinct—not the pasty mass rice often becomes when improperly cooked. It may be eaten with cream and sugar, or with milk only.

SARATOGA POTATOES.

Pare large sound potatoes; slice very thin, and cover with salt water. Prepare a kettle of boiling lard or dripping, as for frying cakes. Take a handful of the sliced potatoes; dry them in a napkin, and throw into the boiling lard, taking care that the pieces do not stick together. Stir with a fork until they are of a golden brown color; skim them out, and lay upon a clean napkin to absorb the grease. Serve either hot or cold. When dry, crisp and free from grease, they are greatly relished by such invalids as can eat potatoes.

DANDELION SALAD.

Take equal parts of young dandelion tops and water cresses; wash, and add a little shredded onion, and dress with oil and vinegar, or cream and vinegar, with salt and pepper to the taste. To prepare the cream dressing add one table-spoonful of moderately strong vinegar to a tea-cupful of sweet cream. This is equally nice for sliced cucumbers.

WATER-CRESS.

This plant affords an excellent relish to a delicate appetite. Wash clean, and pick off decayed leaves; cover with ice-water until ready to eat; then shake free of water; pile lightly on a glass dish, and season with salt.

BAKED APPLES.

Select any juicy, sour apples; wash, but do not pare them. Pull out the stem and cut out a circular piece from the blossom end, making a cavity half an inch deep and one inch in diameter. Fill this with granulated sugar. Set the apples in a basin, sugared end up; pour in just enough water to cover the bottom, and bake in a quick oven. They may be eaten hot or cold. Serve them separately in a sauce dish; pour a tea-spoonful of the juice over each, and eat with cream and sugar.

APPLE JELLY.

Wipe the fruit, and cut it into pieces without paring or removing the seeds. Put into a porcelain-lined kettle, with barely enough water to cover. Boil slowly, until the apples are very tender; then drain them through a flannel jelly-bag; do not squeeze, or the jelly will be cloudy. To every pint of this juice allow one pound of granulated sugar; return the juice to the kettle, and bring it quickly to a boil; then add the sugar; stir until dissolved, and boil until it will jelly. This should be in twenty minutes, but it sometimes requires thirty to forty minutes.

To Test the Jelly.—Take out a tea-spoonful of boiling jelly; pour it into the bottom of a saucer, and let it cool for a minute or two; then scrape it one side with a spoon. If jellied, the surface will be partly solid. As soon as it jellies, roll the glasses in boiling water; then fill with the boiling liquid. Let them stand until the jelly is hard and cold; then put on the covers. If common tumblers without covers are used, paste over them two thicknesses of tissue paper; then moisten the top of the paper with cold water. This stretches the paper; draw it tight and press the edges firmly down to the glass; as it dries it will become hard as parchment. Keep in a cool, dark place.

RHUBARB JELLY.

Wash and wipe the stalks, and without paring, cut into pieces about one inch long; place in a porcelain-lined kettle, allowing one pint of water to every four pounds of rhubarb. Boil to a soft pulp, turn into a jelly bag, and hang up to drip; do not squeeze or press. To

every pint of juice allow one pound of sugar. Boil, and finish the same as apple jelly. This is laxative.

RHUBARB JAM.

Wash the stalks, and cut into pieces about an inch long. Do not peel it. Weigh, and to each pound allow three-quarters of a pound of sugar. Put all in a porcelain-lined kettle, bring slowly to a boil; then stir continually for three-quarters of an hour, when it will be done and ready to put into tumblers or jars, and cover with tissue paper. Excellent for those of constipated habit.

BLACKBERRY JAM.

Six quarts of ripe berries and three pounds of brown sugar; mash together, and boil slowly for two hours, stirring often to keep from burning. Put it into a jar; when cool, seal it up with tissue paper. It will keep well. Useful in diarrhœa.

TOMATO FIGS.

Allow to six pounds of tomatoes three pounds of granulated sugar; select those that are ripe, small and smooth; scald and remove the skins. Place a layer of the tomatoes in the bottom of a porcelain-lined kettle; strew them thickly with sugar, and place over a moderate fire. Stew very gently, until the sugar appears to have penetrated the tomatoes. Lift them carefully, one at a time with a spoon; spread them on dishes, and dry in the sun, sprinkling with granulated sugar several times while drying. When perfectly dry, pack in small jars, with a layer of sugar between each layer of tomatoes. Care must be taken not to let rain or dew fall on them while drying. Excellent for bilious people.

ICE CREAM.

One quart of cream, one pint of milk, a cup and a half of granulated sugar; flavor with vanilla or lemon. Beat the cream to a froth; stir in the milk, sugar and flavor; freeze, and it is ready.

PLAIN BOILED CUSTARD.

Take one large, fresh egg; beat the yolk thoroughly with one table-spoonful of granulated sugar; and while doing this have a coffee-

cupful of milk heating over the fire. Beat the white to a stiff foam; take the milk from the fire, and very slowly pour it over the yolk, stirring it all the while to prevent curdling; then stir in the white; pour all into a small tin pail, and set it inside a pot of hot water. Stir constantly until evenly thickened, which will require about ten minutes. It must not be cooked until it separates. Pour it into the cups in which it is to be served, and set away to cool. This custard may be seasoned with vanilla or any flavor preferred. It is made more attractive by covering with a thick frosting slightly sweetened with a strawberry, a cherry, or a bit of red jelly on the top.

CANDY FOR THE CHILDREN.

Since children crave sweets, it is much better to furnish a home-made article, to be certain that they are not being injured by poisonous colors, flavors or adulterations, which much of the candy offered for sale contains. Maple sugar, honey, sugar, syrup and molasses are all beneficial when not eaten immoderately at the beginning of a meal or between meals. We have collected a few recipes for home-made candy, that can be prepared with little trouble, and is really more delicious than the market article, because made of better materials.

PEANUT CANDY.

Shell the peanuts and chop them fine; measure them in a cup, and take just the same quantity of granulated sugar that there is of peanuts; place the sugar in a frying pan, let it heat slowly to melt the sugar without burning. As soon as it is melted, put in the peanuts and pour in buttered tins.

BUTTER SCOTCH.

Take 2 cups of brown sugar; $\frac{1}{2}$ cup of butter; 4 table-spoonfuls of molasses; 2 table-spoonfuls of water; 2 table-spoonfuls of vinegar; boil all together until it hardens when dropped into cold water, then pour into buttered tins.

MOLASSES CANDY.

Two cups of brown sugar; $\frac{1}{2}$ cup New Orleans molasses; $\frac{2}{3}$ cup of vinegar and water, equal parts; a piece of butter, half the size of an

egg. Boil until the candy hardens when dropped into cold water; then pour into buttered tins. As soon as it is cool enough to handle, pull it until it is of a straw color.

CHOCOLATE CREAMS.

To the white of one egg add an equal quantity of cold water; stir in one pound of pulverized sugar; flavor with vanilla. Stir until fine and smooth; then mould into balls, and dip them into melted chocolate.

To melt the chocolate, scrape and put it into a tin cup or small sauce-pan over a kettle, where it will steam. Let the chocolate be melting while the cream is being prepared.

FRUIT CANDY.

Add $\frac{1}{2}$ cup of water to 1 cup of granulated sugar in a sauce-pan; stir until dissolved; place it over a fire, and let it boil until it becomes crisp when dropped into water. *Do not stir it after putting it on the fire.* Dip out a spoonful at a time, and drop on buttered tins, leaving a space of an inch or more between each spoonful. Place on each piece of candy fruit of any kind, and pour over it enough candy to cover, but do not let the pieces run together. Kernels of walnuts or any kind of nuts may be used instead of fruit.

FAMILY PETS.

It is rare to find a family in any grade of society without one or more pet animals upon which to lavish their affection; yet, common as they are, very little is generally known concerning their proper care in health and disease.

No animals are more cruelly treated than the helpless creatures kept as pets, because their owners, through thoughtlessness or ignorance, allow them to suffer in sickness, without an attempt to relieve them, and in health too often deprive them of the means of keeping well; or, in mistaken kindness, endeavor to train them into habits foreign to their nature.

One of the most cruel acts in the world is to abandon a cat or a dog, as many people do when they move, or to carry it a long distance from home and desert it. No one ought to keep any kind of a pet without a love for it; a creature taken away from its natural surroundings, and made wholly dependent upon man, loses its ability to look out for itself, and must have a certain amount of care that becomes irksome to one not fond of pets. When such a person becomes the unwilling possessor of a cat, a dog or a bird, it is better to give it away to the first one who will treat it well than to try to keep it; sometimes no one can be found who wants it; then it should be killed, swiftly and mercifully, rather than to turn it out to starve, or to fall a prey to evil-disposed boys, who consider it rare sport to torture a helpless animal. It may be shot, but be careful to select a good marksman for this disagreeable duty; it may be chloroformed, which is painless, but not always successful; it may be quickly drowned by tying a stone securely to it, and dropping it into deep water. This is a merciful death, and the one to be preferred in most instances. When there is no river or pond near, a wash-tub full of water will be deep enough for anything except a large dog. Children should not be permitted to abuse ani-

mals; it is distressing to a humane person to see the savage traits inherent in human nature developing unrebuked in childhood. The poor, dumpish kitten or puppy, pulled about and pounded until incapable of defending itself, is ruthlessly caught, on attempting to escape, and held while baby pounds it, pulls its hair, or tumbles it over and over at his own sweet will. When the poor creature attempts a protest by the only means in its power—a scratch or a bite—it is promptly cuffed into submission. Any child may be taught kindness, sympathy, and self-denial in connection with the care of its pets, and wise parents will not neglect this important part of its education. The mother or father who permits a child to beat, starve and otherwise ill-treat the creature dependent upon it for care and love, has no right to complain when in later years the selfish, cruel disposition fostered by tyranny toward animals fails to show them the consideration and respect cheerfully rendered by those who have been trained in loving kindness toward all living creatures, and taught to honor their father and their mother, as the Good Book commands.

It is not conducive to honor or respect to see a parent, when a sick pet is discovered, doubled up with pain, or is heard groaning or spewing, pound it with the broom, the poker, or the boot-jack and frighten it nearly to death by abuse, at a moment when it is suffering and needs the kindest treatment.

The whole world is aroused now and then by the recital of special acts of cruelty to men, women or children. Public indignation quickly sweeps away the conditions out of which the outrage developed; yet year after year the world moves on its way, while everywhere among civilized people, and by the family fireside, are enacted tragedies of cruelty and suffering at which the world would stand aghast, were not the consciences of men and women calloused by familiarity with abuse of animals, and were the lips not dumb that suffer.

We have no space wherein to review the history of the members of the animal kingdom that at one time and another have acquired popularity as pets, and must content ourselves with a brief allusion to some of the more common ailments, and the treatment that usually

proves effectual, for those most generally selected for companionship with man.

CATS.

The *food, drink* and *housing* of Pussy has everything to do with her health and usefulness. It is a mistake to suppose that starving a cat makes her a better mouser. A strong, vigorous animal makes the best hunter; a cat ought to be regularly fed twice a day, at least. The dish from which she eats should be clean, her food of good quality and varied, and the quantity sufficient to satisfy the appetite.

FOOD.

Oatmeal porridge, milk, bread and milk and Indian meal gruel make a good breakfast; her second meal ought to consist mostly of meat, with fish occasionally. Do not give eggs until they are cooked and the shell is removed; if given whole, she quickly learns to help herself from the hen's nest.

MANNERS.

Teach her to wait patiently till she is served, and do not allow her to sit at the table or to jump upon it; your fondness for your pet may be so great as to enable you to overlook or to be indifferent to her smelling, tasting, or running over the food prepared for yourself—but do not expect others to be equally free from prejudice. There are some people whose sense of smell is so highly developed that they detect the odor of the cleanest cat on everything she has touched; therefore, it is better to make special provision for Kitty than to make martyrs of your friends by allowing her full possession of everything she fancies.

A square inch of fresh butter given her occasionally not only acts as a gentle laxative, but gives her fur a fine gloss. Those who wish to have her make an extra fine appearance touch her all over with a sponge dipped in fresh cream; when she licks herself, it gives her coat a handsome finish.

Too much meat is injurious; liver especially is apt to induce a troublesome diarrhœa.

DRINK.

A dish of water ought to be placed where the cat may drink when she pleases. This dish should be washed every day, and filled with clean water. Milk does not quench thirst as well as water, and should be given as food, not as drink. During the winter, look to it that the drinking dish is kept free from ice.

HOUSING.

A cat ought to have a good, clean bed in a sheltered place. It is wrong to turn her out of doors at night to prowls around and suffer with cold or damp. A properly trained cat will not make any filth in the house. A box of sand or earth ought to be provided in-doors, to which Puss can be easily taught to resort, and thus save the necessity of some member of the family arising in the night to let her out, and at the same time effectually prevent any soiling of the floor or furniture.

MEDICINE.

There are two remedies with which every cat ought to be provided—*grass* and *catnip*. She knows how much she ought to take, and which is needed. Those who live in the city ought to make an effort to provide these occasionally, whether the cat is ailing or not. Grass acts as an emetic, also as a laxative, according to the way it is taken. Catnip is excellent for fits; castor oil is the best cathartic when one is needed.

DIARRHŒA.

This generally follows irregular feeding, or exposure to wet and cold. Fat meat will bring it on, or too much liver. It makes the animal very poor, and, if not attended to, will end in death. Begin in the treatment by giving half a tea-spoonful of castor oil. Six hours after give a tea-spoonful of Dr. Winchell's Teething Syrup, or an equal quantity of a preparation containing eight drops of laudanum, one tea-spoonful of a $2\frac{1}{2}$ per cent. solution of carbolic acid, and one ounce of water. This dose may be repeated every three or four hours, as long as needed. Milk and lime water should be the only food given during the illness. Keep Puss in a warm place, and do not allow her to be handled or disturbed.

CHRONIC INFLAMMATION OF THE STOMACH.

This disease may be recognized by refusal of food, frequent attacks of vomiting, and loss of flesh. It often follows an attempt to poison a cat. The remedy is an occasional dose of castor oil, or rhubarb syrup, and a milk diet, with fresh fish and raw beef given twice a day. If there is difficulty in keeping anything in the stomach at first, begin with pills made by moistening bread crumbs with a one per cent. solution of carbolic acid, and made up the usual size of large pills. Give one twice a day; a tea-spoonful of glycerine will sometimes allay the inflammation when everything else fails.

BRONCHITIS.

Cats are very subject to this disorder, in consequence of catching cold. It begins with shivering and a slight cough. They become very ill for a day or two, and then the acute stage passes on into the chronic form. There is now apparent difficulty in breathing, constant cough, the tongue hangs over the lower lip, the eyes water, and matter collects about the edges of the lids. The appetite is irregular—sometimes eager and again absent.

Treatment.—Give a dose of castor oil, when there is no diarrhoea; when there is, combine two drops of laudanum with it. Keep the cat in the house in a warm place, and feed her on beef-tea and bread or bread and milk. The only medicines required are cod-liver oil, in tea-spoonful doses twice a day for a fortnight, and Eilert's Extract of Tar and Wild Cherry. These will subdue the cough when there is any relief for it.

CONSUMPTION.

Cats which grow thin, have a rough coat, and refuse food are said to have consumption; this is not necessarily a disease of the lungs. They should have a thorough bath, and be carefully dried after it; they need a clean, warm bed, raw meat in small quantities twice a day, and cod-liver oil with grass and catnip, as wanted, and small doses of Happy Home Blood Purifier three times a day. Sometimes they need small doses of castor oil, repeated every three days.

FITS.

During a fit, hold hartshorn to the nose or choloroform; sometimes drawing a little blood will bring Puss out of a fit; to do this make a small incision on the lower and back part of the ear, and foment with hot water.

The after-treatment depends upon the condition; the fat, heavy cat must be given less food and very little meat, with occasional doses of castor oil. When weak and emaciated, give plenty of warm milk; it is better when a little suet is boiled in it; cod-liver oil also is useful. The best remedy to keep off fits is fresh catnip herb; let her have access to it, and she will take it as often as needed. Harsh handling, and the rough play of children, are frequently the exciting cause of fits in a cat; she must be well treated and not frightened, or medicine will produce no lasting effect.

THE YELLOWS.

This disease is equally fatal to cats and dogs. It is caused by overfeeding, with too little exercise. Those animals that are kept closely confined and pampered are most subject to this disorder. There is at first feverishness, loss of appetite, and shivering; afterwards vomiting of a bright yellow or dark green fluid, mixed with froth. Should this be allowed to continue without treatment, diarrhoea sets in and causes death. Give at the beginning of the sickness half a tea-spoonful of Glauber's salt dissolved in water, or twice the amount of castor oil; follow it by carbohic acid made into pills with bread crumbs; mix three drops of strong acid with enough moist bread to make six pills; give one every three hours, and when all are taken give Dr. Winchell's Teething Syrup to relieve the diarrhoea. Half a tea-spoonful may be given twice a day.

Dysentery may be treated the same as yellows.

MILK FEVER.

Do not take all the kittens away from a cat at once; she ought always to rear one. In milk fever the paps are swollen and painful, the milk is suppressed, and she either tries to kill her kittens or grows

dull and stupid. Foment the teats with hot water, bathe with Uncle Sam's Nerve and Bone Liniment, and give internally three drops of camphor tincture diluted with milk and water, three times a day. One tea-spoonful of castor oil should also be given when the trouble is first noticed.

SKIN DISEASES.

These are usually caused by parasites. The animal should be bathed in warm carbolized water; let every part of the skin receive a good soaking, but take care to keep the eyes from being irritated. Dry the fur quickly; then rub into the skin an ointment composed of ten grains of white precipitate in one ounce of mutton suet. Occasionally the skin becomes diseased from improper food. A cat should be fed on clean material; when driven out to steal her living, Puss is often compelled to eat substances filled with disease germs, or that are partially decayed; it can not be expected that she will remain healthy under such circumstances. The skin disease produced in this way calls for internal remedies. The carboic acid pills recommended for the yellows may be given for several days; but, more important than all, she must have clean water to drink and wholesome food to eat; let her have fresh grass also. When she has been fed on sweets and dainties often, and without regularity, her diet must be changed; give only two meals a day, and let them consist principally of bread and milk, with a little fresh meat once a day. Liver must not be given too freely; it disorders the stomach when it constantly forms the main part of the food. A pinch of sulphur ought to be given twice a day—in milk, if she will take it that way; if not, make into pills with bread crumbs.

SORE EYES.

Cats frequently suffer with inflammation of the eyes, due to colds or injuries. Bathe them with hot weak tea, containing a few drops of carboic acid, and dry them gently. This may be repeated two or three days, after which another remedy will be needed, if not cured. A bit of alum the size of a marrowfat pea, dissolved in four table-spoons of soft water, or two grains of sulphate of zinc to an ounce of

water, are both good remedies. Pour a few drops into each eye twice a day.

ULCERS AND SORES.

These are often seen on the ears or cheeks; one of the lotions named above may be applied after once washing them clean; when these fail to cure, apply the precipitate ointment recommended for skin diseases.

SORE THROAT.

Do not permit a cat suffering from sore and swollen throat to stay among the children. It is known that cats are subject to diphtheria, and some outbreaks of the disease which have a mysterious origin could no doubt be traced to this household pet. The same treatment recommended for human beings will do for animals suffering with diphtheria. It is better, however, to kill them immediately than to run the risk of infecting the family.

DOGS AND THEIR DISEASES.

Man's faithful friend, the dog, is subject to many diseases, some of which may be wholly prevented, and others greatly alleviated by a little care on the part of his owner.

The dog, like the cat, is naturally cleanly when he is given a chance, and his health also is dependent almost entirely upon his *food*, his *drink* and his *shelter*.

FOOD.

The dog digests his food very slowly, therefore he needs only one meal a day. The food should be plain, wholesome, and suited to the circumstances under which he exists. Sweet cake, candy, tea and other dainties are not suited to him, and his digestive machinery is sure to get out of order when confined to such a diet. It is better to give food at noon, or, if two meals are allowed, let one be given in the morning and the other at night. He should not be fed immediately after exercise, until he has had time to rest and become cool, nor just before he is to take active exercise; running or long walks with a full stomach often causes fits. The quantity must be sufficient to fully

satisfy the animal. When he has eaten some time, then pauses, looks around, leaves the dish, returns to it, and makes an attempt to eat a little more, he has had enough, and the remnants of his food should be taken away. Flesh is the dog's natural food in his wild state, and is undoubtedly the best for watch dogs, hunting dogs, and those kept out of doors. Lap dogs and house pets do not need meat beyond an occasional bone; bread with milk, oatmeal porridge, and potatoes should be their food. Indian meal mush is an excellent addition to a meat diet for animals that are expected to work. The meat fed to dogs should be clean and free from vermin. The eggs of tape-worms, deposited in filthy meat and taken with the food, develop very readily in the intestinal canal of dogs. Raw liver is often infested with flukes, a species of worm which develop in the animals feeding upon it, making them unhealthy. Bones are of great value, assisting them in cleaning the teeth and aiding digestion, but should never be given until the appetite is partially satiated with other food; otherwise, they are apt to eat as much of the bone as possible, and portions may lodge in the throat to their injury. Do not seek to persuade a dog to eat against his will; he will not refuse food when he needs it, unless he is sick, and then he needs a special diet. Meat should never be given to puppies until they are at least five months old, and then it should only be given a little at a time, until they are a year old.

CLEAN WATER SHOULD BE FURNISHED PLENTIFULLY.

There are few animals that suffer more for want of water than dogs. It should be accessible to them at all times; for they take little at once, but need it often. They perspire from their mouth, and the practice of muzzling them in a way to keep the jaws closed is a cruel one. When necessary for them to wear a muzzle, let it be of wire, and large enough to permit them to open the mouth wide, and of a shape that will permit them to drink water. Their drink should be clean, and the receptacle containing it needs to be washed daily.

DOGS MUST BE KEPT CLEAN.

Long-haired dogs need special care to prevent their hair from becoming matted and harboring insects. Those breeds which natu-

rally take to the water will wash themselves when they have access to a river or pond. All dogs ought to be washed about once a month; use soap and water, if necessary, to make them clean—but rinse all the soap off, or it will irritate the skin. See that they are thoroughly dried, and are given a clean bed in a warm place, while any dampness remains. The hair ought to be combed out to prevent matting, and to preserve it. The brush is far better to give a handsome coat than any medicine.

SLEEPING PLACE.

Dogs ought to be provided with a dry, sheltered place to sleep. It is very cruel to allow a dog to remain in the house and around the fire during the day, and then turn him out at night to take care of himself. He is very subject to rheumatism, and this custom is largely responsible for it. He should at least have plenty of clean, dry straw, and a bed large enough that he may not be compelled to occupy a cramped position in sleep.

GIVING MEDICINE.

Medicines are prepared in the form of a pill or a draught. The former may be given in two ways: (1) Taking the animal in the lap, or rearing him between the knees, grasp the upper part of the mouth in the hand, and thrust the lips on either side between the teeth; this gives security from being bitten, the dog being afraid of biting or hurting himself. The head is then raised, the pill dropped into the back part of the mouth, the jaws closed and held together; if the animal refuses to swallow, place the fingers on the sides of the nose, compressing the nostrils, and this will compel him to do so. (2) The other method is to inclose the pill in a piece of meat, and let the dog bolt it.

To give a draught, place the animal in the same position as for the pill; draw the angle of the mouth away from the teeth, and into the pouch thus formed pour the medicine; if he refuses to swallow, close his nostrils. Tasteless medicine may be given in milk or broth.

THROAT AND LUNG DISORDERS.

Dogs have colds, catarrh, bronchitis, pneumonia, etc., the same as human beings, and the treatment is similar. Warmth, cleanliness, and

stimulation of excretions are called for. The food should be principally warm soups and milk. Chronic throat and lung disorders demand a change in diet and housing. The animal must be fed sparingly when very fat; asthma and similar troubles are sometimes relieved by reducing the daily allowance of food to a single bone with a small amount of meat adhering to it; this is recommended for pets which have been overfed and indulged with dainties, which are not the natural diet for them. On the contrary, when the animal is thin, a fattening diet is needed; suet and cod-liver oil should be given regularly. An emetic of warm water, with a little salt and mustard, will often cut short an attack of difficult breathing. Castor oil makes a good cathartic for a dog.

DECAYED TEETH, TARTAR AND CANKER.

There is no doubt that the dog frequently suffers severely from toothache; this may be suspected when he eats in a slobbering manner, or refuses to eat, holds his head on one side, and appears dumpish. Decayed teeth ought to be extracted; when the bleeding which follows is excessive, insert in the socket a bit of cotton batting moistened in alum and water. Tartar sometimes collects in large quantities on the teeth of old dogs; the gums become swollen and ulcerated, the breath disgustingly fetid, and the health suffers. It should be scaled off, the teeth brushed with charcoal, and the gums bathed with tincture of myrrh. Give a large bone to gnaw. Canker is often troublesome; when the mouth contains decaying teeth, remove them and cleanse the sores with a one per cent. solution of carbolic acid; also give a teaspoonful internally twice a day. The following mouth wash is also excellent for canker: Alum, five grains; tincture myrrh, half a drachm; water, three ounces. Mix and bathe the mouth twice a day.

DISEASES OF THE STOMACH.

The irregularity with which they are fed, and the lack of suitable food, is the cause of most of the digestive troubles of dogs. The symptoms are loss of appetite or a capricious one, constipation or diarrhoea, flatulency, thirst, vomiting and bloating. The food must be

looked after; if overfed, reduce it to a bone; if not sufficiently varied, change it. Give castor oil for the constipation; compound syrup of rhubarb for diarrhoea; small doses of bi-carbonate of soda and charcoal, ten grains of each in a pill for flatulency, and lime water with milk and bread for diet, when meat has previously formed the bulk of it. The dog must have daily out-door exercise. It is not sufficient to give him an airing in a carriage; let him run and take exercise in the way natural to him.

WORMS AND OTHER PARASITES.

The presence of worms is made known by a dry, husky cough, foul breath, vomiting, colic, voracious appetite with loss of flesh, a rough coat, and sometimes by fits or paralysis. Treatment: Mix one small tea-spoonful oil turpentine with an equal amount of castor oil, and give for one dose. Repeat it in three days, if necessary. Dr. Jaques' German Worm Cakes in double the dose recommended for children is a very effectual vermifuge. It should be followed in a few hours by a tea-spoonful of castor oil. The dog-house must be thoroughly cleansed and disinfected with one of the solutions recommended for disinfecting houses; let it dry and then provide fresh bedding.

SKIN DISEASES.

Mange is similar to itch in man. Filth and neglect favor it, but alone can not produce it. The skin itches intensely, and a close examination will show small, red points like flea bites. The disease must be treated early to prevent its spreading to all parts of the body. The animal becomes a miserable object when neglected, and when the owner is not willing to take the trouble necessary to cure the disease, a sense of humanity ought to impel him to kill it and end its misery. The treatment, however, is not difficult. The hair when long should be shaved, and the whole body thoroughly washed with soap and water. All mats or blankets on which the dog has slept should be boiled in a disinfectant. Straw or other bedding should be burned, and until the animal is cured he should have no other bedding than straw or shavings. The same lotion and ointment may be employed as recommended

for itch in human beings. For house-dogs, and especially those having very fine skins and smooth hair, an excellent and safe remedy is the balsam of Peru dissolved in alcohol—one of balsam to four of alcohol. This has no unpleasant odor, and will cure the disorder when it has existed but a short time. Wash the skin with warm soap suds, to soften the crusts, before applying.

RED MANGE

is similar to salt-rheum or tetter in man, and is ordinarily due to lack of exercise and injudicious feeding. An excess of animal food without exercise overheats the system, and overloads the blood with elements that are not needed. Nature tries to remove them through the skin, and an eruption is the result.

A bread and milk diet must be given, and an aperient dose of castor oil. Happy Home Blood Purifier in tea-spoonful doses, twice a day, is very useful in all skin diseases, as well as canker and indigestion in dogs, when the diet is suitably modified. There is a soap, not designed for medical purposes, which contains a large amount of tar, and is unexcelled in cleansing sores and healing chapped and cracked surfaces. It can not be too highly recommended in all diseased conditions of animals attended by irritation of the skin; it is called Uncle Sam's Harness Soap, and is for sale by druggists and harness dealers everywhere. Uncle Sam's Nerve and Bone Liniment makes an excellent healing application after cleansing the eruption.

RINGWORM.

Shave the hair over it, and soak the scaly surface in a strong soap suds, made with the Harness Soap recommended above; then treat as described for the same disease in man.

ABSCESSSES, BRUISES, ULCERS, ETC.,

are also treated the same as in man. Abscesses need poulticing until they are soft and the pus is formed, when they should be opened and thoroughly cleansed. Bruises may be treated by hot water fomentations; ulcers need to be bathed in carbolyzed water, and when they look unhealthy the surface must be cauterized with nitrate of silver. Uncle Sam's Nerve and Bone Liniment makes an excellent healing application.

FITS.

Dogs of all breeds are very liable to fits, and the epileptic form is the one most frequently seen. They are very liable to be mistaken for hydrophobia, with which they really have no connection. The animal, apparently in perfect health, is in a moment seized with a fit. He suddenly reels, as though intoxicated—falls on his side, and violent convulsive spasms attack the muscles, especially of the legs, which keep up a continuous kicking motion. Frequently a sharp bark escapes from the animal when he falls, and sometimes there is a whimpering cry. During the attack the urine and fæces are often voided. The tongue is sometimes severely bitten, the gums are of a leaden or livid hue, the mouth filled with frothy saliva, and the eyes are unnaturally prominent. Five minutes after the attack the animal is usually on his legs, and may appear in perfect health. Sometimes he lies motionless and unconscious for half an hour, as if sound asleep. The dog recovering from an epileptic fit has a peculiar, bewildered look. On regaining his feet, he either makes off as fast as he can run, or rushes viciously at those about him. The latter is one of the most unpleasant symptoms of the disease, for the animal is for the moment unfriendly alike to friends and strangers; this is what leads the spectators to believe the animal is mad.

Treatment.—A dog seized with a fit should be secured for the double purpose of preventing his biting any one, or running away. Do not tie anything around the neck to compress the blood vessels, or dangerous results will follow. Cold water may be poured on the head and dashed in the face; when convenient bathe the back part of the head with some stimulating liniment. The after-treatment should be directed to finding the cause and removing it.

The Cause.—It may be worms, which should be removed, as directed elsewhere. The teeth may be in bad order; they should receive attention. Suppression of secretions or evacuations are a frequent source of fits; these must be restored by cathartics, emetics or a blood purifier. If they arise from suckling, remove the whelps, or all but one, and

give a more nutritious diet. If due to over-exertion directly after eating, do not repeat the cause. Sometimes excessively fat animals are affected in consequence of rapid exertion, for which they are unfit; a reduction of their food supply is demanded. Too much fresh meat is an occasional cause; this demands a mixed diet, principally bread and milk.

HYDROPHOBIA.

The origin of hydrophobia is unknown. The poison which produces the disease is in the saliva of the affected animals, and there is good reason to believe that it may be found in other secretions. It is conveyed from one animal to another, and to man by inoculation; no breed of dogs is free from it, but homeless, roving animals are more frequently attacked than others. A great many observations have been made to determine how long a period is required for the disease to develop. One experimenter had 68 dogs confined where they could be watched, after being bitten by an animal known to be suffering from hydrophobia. One dog began to exhibit decided symptoms on the fifth day, and hydrophobia was fully developed on the tenth; ten of them showed no signs of infection until the thirtieth day, and on the thirty-fifth the malady was at its height; the longest period that elapsed before the inoculated dog became mad was one hundred days; the rest of them were attacked at varying intervals between the fifth and hundredth days. Comparing the results of many recorded observations, the average period between the exposure and development of the disease is three months. What takes place during this period we do not know; but the wound usually heals, and rarely shows any sign of irritation afterward. The duration of hydrophobia is from one to ten days; most deaths occur on the fifth day. This strange disorder assumes *two* forms—the *furious* and the *dumb*. The first form is marked by a distinct change in the dog's natural manner and habits; he becomes all at once sullen, or melancholy; retires into dark places, and when called he either pays no attention or slinks off again. The eyes look vacant, and when they meet the gaze of the observer they droop in a weary, sleepy manner. As the disease proceeds he becomes

destructive: he tears the carpet and clothing—or, if confined in his kennel, he scatters the straw, and destroys anything he can; he appears to be delirious, snapping and barking at imaginary objects. A flow of tenacious saliva now occurs. The animal grinds his teeth and strives to free his mouth with his paws, seeming to have a bone in his throat. Attempts to dislodge it has sealed the fate of more than one person, either by being bitten, or, what is equally dangerous, through having a scratch or raw spot on the hand, which the saliva infected. The voice becomes altered, having a croupy sound, most frequently heard at night. The breathing is short and painful, and the animal appears to be exhausted; he may sink into a state of stupor, or die in a paroxysm of rage. Another important symptom is the *appetite*; this is unnatural: he swallows pieces of wood, stones, earth, hair, excrement and other filth, while he refuses his ordinary meal. His mode of locomotion is peculiar. The head is carried low, the tongue hangs out of the mouth, and is swollen. He rarely turns from his path to attack anything unless it be another dog, but he savagely bites and tears any one who attempts to stop him. He runs until exhaustion overtakes him, or a fit, when he lies in an unconscious state for hours.

The *dumb* madness has about the same symptoms as the preceding form, except that the voice is silent, and there is paralysis of the muscles of the jaw, allowing it to drop. Complete paralysis occurs before death. Animals or persons bitten by a dog with *dumb* hydrophobia may suffer from the *furious* form, and *vice versa*, showing that they are only different varieties of the same disease.

It would save much unnecessary anxiety to shut up a dog that has bitten either men or other animals, and is suspected of being mad, to await the development of his disorder; in many instances it would be found that he is not mad, but suffering from some harmless complaint. Should it prove to be hydrophobia he can then be destroyed, and his victims will be more likely to receive energetic treatment than when there exists any doubt as to their danger.

DISTEMPER.

Distemper may be described as a catarrhal fever, or, more correctly, an influenza, which affects not only the mucous membranes of the

head, the air passages and alimentary canal, but involves the nervous system, as shown by fits and paralysis. It is highly contagious, but frequently originates where direct contagion can not be traced. The causes which favor its development are badly-drained and ill-ventilated sleeping places, exposure to damp and cold, poor food, over-feeding with flesh, and too little exercise. Worms are believed to aggravate the trouble. As the disease is coming on the dog has a heavy, sleepy look, the nose is hot and dry; there is loss of appetite, shivering, arched back and apparent weariness. Two or three days later a watery discharge takes place from the nose and eyes; there is frequent sneezing, followed by coughing and vomiting. The watery discharge soon becomes thick and white, the eye-lids inflamed and swollen, the breathing rapid; the dog seems chilly, and loses strength fast.

Treatment.—Place the animal in a clean, warm and dry place that is well ventilated. Give him an emetic consisting of a tea-spoonful each of mustard and salt in warm water; give him also a dose of castor oil, and bathe the neck and chest with Uncle Sam's Nerve and Bone Liniment. Eilert's Tar and Wild Cherry is excellent for the cough, which is nearly always present; give from a half to one tea-spoonful, according to the size of the animal, three times daily. After the disease has existed several days and weakness increases, give a grain of quinine in the morning and at night, for a week or more. The food should be light, warm, and mostly liquid, such as milk, broth or porridge of oat-meal or Indian meal. The eyes need care to preserve the sight; bathe them in hot water and drop in a mild astringent lotion; a good one consists of two grains of alum dissolved in one ounce of soft water. The method of treating ophthalmia in human beings is a good one for a similar affection of the eyes in the lower animals.

Great distress in breathing, and severe inflammation of the lungs, complicating distemper, calls for hot baths, after which the dog must be carefully dried, and his chest covered with hot flannel. He must be well housed and carefully attended to until perfectly restored; neglect not only protracts it indefinitely, but is liable to make the ani-

mal worthless by inducing fits or paralysis, which are exceedingly difficult to cure when the result of distemper.

CANARY BIRDS.

No household pets are deserving of better care than the delicate feathered songsters whose cheerful notes add so much to the pleasure of the home circle. They are, however, subject to many cruelties through the thoughtlessness of those upon whose care they are dependent.

The practice of hanging birds out at a window in a small cage open on all sides, and so fully exposed alike to the burning rays of the sun and the chilling winds, can not be too strongly condemned. The little prisoners suffer greatly from draughts after being confined in a hot room for some time. The custom of hanging the cage in the upper part of the room, where the heat is greatest, unfits them for resisting the effect of cold air when the window beneath is raised to ventilate the room, or an outside door is opened. We have seen a large lamp thoughtlessly set beneath a metal cage, until the bird within had nearly perished from heat. The cage is often too small, not giving the little prisoner sufficient room for exercise.

BATHS.

Canaries need to be daily supplied with fresh water for a bath; they will not bathe in dirty water. Provide them with a bathing dish which holds not less than a gill of water; a small vegetable dish will answer when a regular bath dish can not be found. After the bird has bathed, dry the cage with a soft cloth and take out the bath dish.

DRINK.

A cage bird is very liable to suffer from thirst. The drinking cup should be cleaned daily, and filled up, so that the bird can easily drink the water. It should be kept free from ice in the winter and fully supplied in summer; if not looked after, evaporation will lower it beyond reach.

DIET.

A plain, simple diet is far more likely to keep canaries in health than the choicest variety that their owners are tempted to give them.

The best regular daily food is a mixture of rape and canary seed, with a few hemp seeds in winter; they are too oily and heating for warm weather. Hemp seed should be cracked, for the shell is too hard to be broken by weakly or young birds. Seed must be kept where mice can not get at it. Birds will not eat seed smelling of mice until they are nearly starved; the inside of the seeds also may be eaten out, while they look to be perfect, and carelessness in this respect may result in the death of the birds. Seeds should not be preserved in a cigar box; the odor of tobacco is injurious to birds, while it is possible that bits of it may be mixed with the seeds, and poison them. The seed box should be cleaned daily, the husks blown away, and the good seed returned to the box. Always see that there is seed enough left at night for the bird's breakfast. Young birds especially suffer severely when compelled to wait for late risers to feed them. A little hard yolk of egg, ant's eggs, small worms, and spiders may be occasionally given—also lettuce, cabbage leaf, water-cresses, celery, and a slice of apple; but all food except seeds must be given sparingly. Pastry, sugar and other delicacies not only spoil their digestion, but produce slow consumption. Birds need plenty of clean, dry sand—enough to roll in, which they are fond of doing. Cuttle-bone is beneficial in two ways: it serves to polish their bills and aids digestion. It ought to be clean, and placed where they can easily reach it.

COLDS.

Canaries often take cold, in consequence of draughts from open doors or windows, sudden changes of temperature, and particularly the great difference between the day and night in the atmosphere of living rooms. Their voice is hoarse, they sneeze and shake their heads. Treatment: Keep them warm and free from the causes that gave rise to the sickness. The nostrils need opening when they are closed by tenacious, sticky mucus—to do which, dip a small feather in sweet oil, and draw it through the orifices.

GAPES, OR THE PIP.

Young birds are liable to a disease which resembles the "gapes" of poultry. The bird mopes, is uncomfortable, ruffles up its feathers,

and keeps opening its bill, as if it wanted air. The bill is dry and yellowish underneath the eyes, and looks diseased. The tongue becomes dry and rough, and the orifices of the nose are stopped. This is supposed to originate in a cold, and should be treated in the same way. Moisten the tongue with glycerine, when very dry. Give warm milk, containing a little pinch of pepper, and also give water-cress, or celery tops.

ASTHMA.

Very little can be done for this complaint, except to regulate the diet. Give rape seed only, and plenty of bread moistened with water, lettuce, water-cress and ripe apple. Keep the cage and all dishes used in and around it very clean; after washing the cage, also after a bath, dry the cage and perches, as dampness increases the difficulty of breathing.

CONSUMPTION.

A bird is known to be suffering from this complaint when it inflates and distends itself, and its feathers are ruffled, while it loses flesh. Give it a common spider for a purge; it needs also iron for the blood, which is given by placing a rusty nail in the water of its drinking cup. Give water-cresses, or celery freely; keep it out of draughts, and do not give it messes or sweets.

CONSTIPATION.

This malady is detected by observing that the birds are frequently trying to evacuate, but are unable to do so. Make a small stick—about the size of a match—perfectly smooth, dip it in olive or castor oil, and gently thrust it into the rectum; also make the bird swallow a few drops of the oil.

. DIARRHOEA AND DYSENTERY.

The bird evacuates a chalky substance, which hangs to the feathers; it is very irritating, and inflames the anus. Cleanse the parts carefully with carbolized warm water, and anoint with cosmoline. If it appears to be in pain, give two or three drops of camphor in water; and for food, boiled bread and milk with a little pepper. Hot milk and lime water is useful when the bird is very weak.

TYMPANY.

One part of the body, sometimes the whole, is puffed up tense as a drum. Puncture at the point where the skin is most tense with a needle to let the air escape, after which the bird will usually recover; give soft, plain food for a day or two.

EPILEPSY.

This is a common malady among birds. They are found unconscious in the bottom of the cage, with feathers fluffed out. Birds that begin to lay eggs early, while the weather is still cold, are more liable to fits than at any other time. They need iron; a rusty nail in their water cup, and a small quantity of hard boiled egg yolk peppered, and green food, of which water-cress and celery are the best. Do not give them cake, sugar, candy, or anything else, except canary and hemp seed. Keep them warm and free from a chill.

EGG-BOUND.

The bird is noticed to be drooping; she is a long time making a nest, and seems weak. She will be found crouching on the floor of the cage, or in a heap on her perch. No egg is laid, and she continues to grow worse. Take a small camel's hair brush, dip it in castor oil, insert it in the vent of the bird, and also pour two or three drops in the bill, and compel her to swallow it. This will generally be sufficient to relieve her, and next day she will be all right.

STOPPAGE OF FAT GLANDS.

Every bird has a small gland located above the tail that secretes oil, with which the plumage is dressed to keep moisture from passing through it. If the bird sits drooping, with tail bending downward, and the feathers are dry and ruffled, while the bird frequently pecks at the gland, an examination will commonly show it to be swollen and closed. Moisten it with Uncle Sam's Nerve and Bone Liniment occasionally, until softened a little; then, with a dull needle or fine knitting needle, gently open it. Repeat the application of the liniment until the swelling disappears.

PARASITES.

Birds that are restless at night, and are observed to be feeling with their beak about the abdomen, are probably infested with small,

yellow insects, called lice or mites. Sometimes the feathers become rough, and those on the wings are shed until the skin becomes quite bare and red. This means that the birds have small, red lice, nearly invisible to the naked eye. These may, without being discovered, become so numerous as to destroy the bird. Fill the bath dish with clean water, and set beneath the bird in the cage, after it is at rest for the night; if the water be examined in the morning sometimes lice will be found floating on it, when none can be found on the bird. Mix ten grains white precipitate in half a tea-cupful of warm water; dip the bird in it, taking care not to let the lotion touch the eyes or bill; let the feathers become thoroughly saturated, and with a camel's hair brush moisten those around the eyes; then wash the bird in warm water containing a little mild soap; wrap in a piece of flannel, and lay it in a warm place to dry. Clean the cage, perches, dishes, and throw away all seed, cuttle-bone, and everything the bird has been using. Pour the precipitate lotion in the cage and over the perches, and then rinse in soap suds; wipe it dry, and return the bird to it.

OVERGROWN CLAWS AND BEAK.

These have a bad effect on the health, because the bird is afraid of becoming entangled in the wires of the cage or other objects about it, and will therefore mope and refuse food; therefore, they should be properly trimmed with a pair of sharp scissors. Care should be taken not to cut them so closely as to draw blood. This may be avoided by holding the claw to be operated upon to the light, when the vessels may be seen. Grasp the bird firmly, yet very gently, using no haste.

LOADED FEET.

The feet sometimes become loaded with a thick crust, which clogs them. Take a saucer, containing lukewarm soft water; catch the bird, and hold the feet in the bath for at least five minutes. Rub them gently; repeat daily for three or four times. This trouble is caused by dirty cage or a lack of sand. While the bird is being treated, give it a cracked hemp-seed to quiet its fear. Let the bird stand on a bed of fine dry oatmeal for a moment, when the bath is over; this dries the

feet, while its dust does not harm the feathers. Anoint the feet with a good liniment, and keep the cage clean.

BROKEN LIMBS.

A bird with a broken leg ought to be placed on soft flannel; its seed and water cup being placed near, that it may help itself without being obliged to flutter about. Give it plenty of chickweed, water-cress and apple; keep it warm and quiet; straighten the broken bone; wrap it in a little soft cotton, and bind on a splint. *Be sure to turn the foot in the right direction* before fastening the bone.

MOULTING.

Birds need to be well nourished during the time of moulting, and must be carefully kept from exposures liable to give them a cold. Place a rusty nail in their drinking dish; give boiled egg yolk, and when they appear to be drooping mix a very little powdered cayenne pepper with milk, and feed to them once or twice a day.

OUR DUTY TO DUMB ANIMALS.

To many of our readers it may be a new thought, yet it is none the less true, that man incurs a duty in taking under his protection members of the animal creation for his amusement or convenience. Left to a state of nature, these creatures are endowed with instinct which enables them to adapt themselves to their surroundings and to provide for their own wants. Removed from these conditions, and thrown wholly upon man for the necessities of life, their instinct becomes latent—at least, it is not adapted to their domesticated state; therefore, as man is responsible for this helplessness, it is his duty to make provision not only for the existence, but the happiness of the dumb creatures he adopts for his companions.

“ —they are all—the meanest things that are—
As free to live, and to enjoy that life,
As God was free to form them at the first,
Who in His sovereign wisdom made them all.
Ye, therefore, who have mercy, teach your sons
To love it too.”

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WILD CHERRY TREE.

EILERT'S Extract of Tar and Wild Cherry

For Coughs, Colds, Hoarseness, Spitting of Blood,
Bronchitis, Asthma, Influenza, Pleurisy, In-
flammation of Lungs, Pains in the
Chest and First Stage of
Consumption,

And all Throat and Lung Diseases.

Five Good Reasons for our Confidence in

EILERT'S EXTRACT OF TAR AND WILD CHERRY.

1. *It is Compounded of Ingredients that are Known, the World over, to Exert a Special Beneficial Effect upon the Respiratory Organs.*

2. *This Syrup is Prepared in the Most Skillful Manner, by an Expert Chemist, so that the Curative Properties of Each Separate Article are Preserved, while all Inert Portions are Carefully Removed; in this way a Medicine is obtained that Possesses Powerful Remedial Effects in a Palatable Form, that is not Objectionable to the most Fastidious Taste.*

3. *It is a Purely Vegetable Remedy, and contains no Poison; therefore, it is adapted to the Most Delicate Invalid, as well as to those of Robust Constitution.*

4. *It possesses the Most Remarkable Properties, having Anodyne, Expectorant, Antiseptic and Tonic effects upon different diseased conditions. As an Anodyne it allays cough and spasm of the bronchial tubes; this gives it value in croup, asthma and severe colds. As an Expectorant it loosens the secretions, and enables the patient to remove obstructions from the breathing apparatus, in colds, whooping cough, bronchitis, pneumonia, catarrh, etc. As an Antiseptic it is destructive of germ life, and is peculiarly obnoxious to the bacillus of consumption. It renders the secretions of the respiratory organs healthy, and unfitted to sustain those animal organisms that can survive only in unhealthy mucus. As a Tonic it lessens unnatural secretions, and restores the membrane lining of the throat and lungs to a state of health; it also improves the circulation of the blood, and renders the system less sensitive to the injurious effects of colds.*

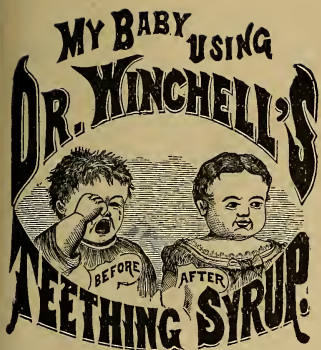
5. *It has been in constant use for twenty-five years, and although it has not been extensively advertised through the papers, yet its sale has steadily increased. Those who have used it, and have been benefited or cured, tell their friends and neighbors of the great value it is to them and their families; these, in turn, tell others, so that little by little, it has acquired its present reputation, which we are proud to believe is based solely upon its merits, and is bound to increase as it becomes more widely known, and so long as we shall preserve the standard of excellency in its manufacture, which we claim is absolutely essential to its efficiency.*

CAUTION.

As a result of our success, *worthless imitations of this Valuable Remedy are on the market.* All purchasers should see that "Prepared and Sold by Emmert Proprietary Co., Chicago, Ill.," is printed on the bottom of the label. *No other is genuine.* Without this precaution valuable lives may be lost by trusting to a compound that contains none of the properties which our remedy possesses.

FOR SALE BY ALL DRUGGISTS. PREPARED ONLY BY

Emmert Proprietary Co., - - - - - Chicago, Ill.



DR. WINCHELL'S TEETHING SYRUP

Is confidently recommended for

Cholera Infantum, Diarrhœa, Dysentery, Colic, Nervousness, Summer Complaint, Coughs, Colds, Sore Throat, Sore Mouth, Acidity of Stomach, Convulsions, and all ordinary diseases of infancy and early childhood.

SAVE THE CHILDREN!

HEALTHY CHILDREN ARE HAPPY AND GOOD NATURED.

Fretfulness, Peevishness, Crying, Unwillingness to Play as usual, all indicate some disturbance of the nervous system. In childhood, stomach and bowel diseases predominate and re-act upon the nervous system, transforming the bright, laughing little one, the joy of the home, into a dull, pining, irritable creature, at once a care and a trial to the mother, whose health suffers from incessant solicitude over her child.

DR. WINCHELL'S TEETHING SYRUP

was a favorite prescription of a celebrated physician, and has been for many years known to the public, and is guaranteed to be a **safe, reliable and pleasant medicine**. It soothes the child and quiets the nervous system, enabling it to get quiet rest and peaceful sleep, thus allowing nature to rally her forces and **make the child strong, healthy, cheerful and happy**. A fretful child is sick and needs a soothing remedy, not only for the sake of giving rest to the tired mother, but to restore the nervous system, which plays so important a part in the ailments of childhood. If constantly irritated, it predisposes to **Convulsions and Brain Disease**, the two complaints most fatal in infancy. The large mortality of infancy is due to improper diet, **poisonous drugs** administered as medicine, and debility from **neglected disorders**. The belief that all complaints during the teething period must be endured is a mistaken one, and causes the death of thousands of little ones annually. **If you have never used DR. WINCHELL'S TEETHING SYRUP** you are doing yourself and children an injury by failing to give it a trial at once.

⚠ Beware of the numberless vile cordials, drops, etc., which are flooded over the country, but try **Dr. Winchell's Teething Syrup**, and you will find it

JUST THE REMEDY IN TIME OF NEED.

Distrust all remedies for children that are not, like

DR. WINCHELL'S TEETHING SYRUP,

Guaranteed free from opium and all injurious drugs.

Prepared by the Emmert Proprietary Co , Chicago, Ill.

FOR SALE BY YOUR DRUGGIST.

Happy Home Blood Purifier and Health Tonic.



This invaluable remedy is composed of a variety of the best known medicines, combined to form a BLOOD PURIFIER and TONIC of unrivaled excellence. Physicians recommend it for

All Diseases Caused by Impure Blood.

It is a PURELY VEGETABLE PREPARATION, possessing *alterative, aperient, diuretic and tonic* properties never before found in the same remedy, and rendering it

THE MOST EFFECTUAL SYSTEM RENOVATOR EVER DISCOVERED.

Being PLEASANT to the TASTE, children take it without complaint. FREE FROM ALCOHOL, it can not develop an appetite for intoxicants. GUARANTEED TO CONTAIN NO MERCURY OR OTHER INJURIOUS DRUGS, it is harmless. LONG EXPERIENCE HAS PROVED ITS VALUE.

It Strengthens the Stomach,
Arouses the torpid Liver,
Clears the Skin of all Eruptions,

Renovates the Kidneys,
Regulates the Bowels,
Removes all impurities from the System.

IT CURES

*Rheumatism,
Dyspepsia,
Indigestion,
Biliousness,
Headache,
Heartburn,
Jaundice,
Kidney Disease,
Eczema,*

*Pimples,
Dropsy,
Tumors,
Fever and Ague,
Skin Eruptions,
Malaria,
Dumb Ague,
Neuralgia,
Lumbago,*

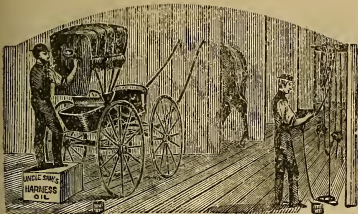
*Debility,
Liver Complaint,
Erysipelas,
Hemorrhoids,
Tetter,
Dizziness,
Paralysis,
Acne,
Heart Disease.*

A trial will convince the most skeptical that Happy Home Blood Purifier and Health Tonic will accomplish all that is claimed for it. It is put up in bottles of two sizes.

Price, Small Size, 50 Cents. Large Size, \$1.00.

Ask your Druggist for "Home Treatment." A Medical Pamphlet replete with valuable information furnished FREE. Published by the

EMMERT PROPRIETARY CO., - - - CHICAGO, ILL.



UNCLE SAM'S HARNESS OIL!

THE BEST OIL EVER MADE FOR

Preserving Harness, Carriage
Tops, Leather Belting,
Boots, Shoes, Etc.

The attention of every one owning or using Harness is invited to the merits of this celebrated Harness Oil and preparation for oiling leather. The manufacturers are confident they have succeeded in making an article that has never had its equal for its beneficial effects, and for OILING LEATHER of all kinds, and that fully meets the necessary requirements of good Harness Oil—an oil that can be used on the different grades and qualities of leather. Uncle Sam's Harness Oil fully meets this want.

It is prepared from the very best materials and ingredients known for their good effect on leather, and it does not fail to give the most complete satisfaction in every instance.

It will make the oldest leather soft and pliable as when new.

It will fill up the pores of leather, thus preventing cracking and breaking.

It will put on a good, durable finish, that will not rub off or soil the hands or whatever comes in contact with it.

It is water-proof, and will keep leather from rotting.

It will add strength and durability to the stitches, and, being heavier than clear oil, it will last much longer.

One oiling with this Oil will last longer than three oilings of any other oil.

Uncle Sam's Harness Oil, on account of its great reputation and good quality, is more extensively sold than all oils combined. It is put up in nice tin cans, in half-pint, pint, quart and nearly two-quart sizes, with a handsome label, and the patent screw top, which are very convenient and always ready for using.

Sold by all Dealers in Leather, and Harness Makers.

UNCLE SAM'S HARNESS SOAP,

for washing off Carriage and Buggy Tops, Dash Leather, and all the finer grades of leather, also for sponging off the finer grades of Carriage and Buggy Harness after being used.

It will not only clean leather, but will also leave a smooth, black finish.

It will take out and absorb the dirt better than any other soap. It is made from the very best materials, and is very beneficial to leather, making it clean, soft, and restoring it to look as good as new.

This soap is far superior to Castile soap for sponging off harness after being oiled, as it makes a thicker, heavier and more lasting lather, and leaves a brighter and smoother finish.

UNCLE SAM'S WATER-PROOF OIL BLACKING.

THIS IS THE ONLY PERFECT WATER-PROOF OIL BLACKING MADE FOR GREASING OR OILING BOOTS, SHOES AND LEATHER.

It should be used by every one, because it has a softening, penetrating and pliable effect on leather, making the hardest leather as soft and pliable as when new.

It is made of the very best materials, and is water-proof.

It strengthens the fibers of leather, and prevents them from breaking, while oil or tallow will soften leather, but injure it.

This blacking will enable the leather to resist intruding substances, such as sand, lime, dust and sharp points.

It takes one-half less for the same surface than any other blacking now in use, and the effect produced is much more lasting.

When used according to directions accompanying each box, it will increase the durability of leather one-half.

The leather will admit of a good polish with polish blacking immediately after using the leather preservative.

PRICE, LARGE BOXES, 25 CENTS.

Prepared by EMMERT PROPRIETARY CO., Chicago, Ill.

UNCLE SAM'S NERVE AND BONE LINIMENT

FOR THE FAMILY

Soothing, Cleansing, Healing.

It Soothes the Pain of Burns and Frost Bites.

It Cleanses Ulcers, Sores and Eruptions.

It Heals Cuts and Open Wounds.

AN ADMIRABLE APPLICATION

To Chilblains, Bruises, Cuts, Scalds, Felons, Boils, Carbuncles, Sprains, Pain in the Back or Side, Rheumatic Pain, Sore Throat (externally), Stiff Joints, Swollen Face, Stiff Neck, Old Sores, Eruptions, Chaps, Cracks.

The *Ingredients* of which this *Valuable Liniment* is compounded ARE NOT claimed as NEW; they have been used in various forms as Liniments and Pain Extractors for at least half a century, with excellent results. We claim that they have never been compounded in any form which approaches to the excellence that *Uncle Sam's Nerve and Bone Liniment* possesses. The verdict of the public is to the same effect, for wherever introduced during the past decade it has superseded other preparations for which similar claims were made, and this in virtue of its merits as revealed by use, and not by laudatory advertisements, which may serve for a brief period to attract attention to a preparation, but cannot establish it in public estimation unless it is really what it claims to be.

FOR ANIMALS.

This Liniment Possesses the most Penetrating and Healing Properties of any Remedy ever Prepared for Wounds, Stiffness of Joints, Galls, Scratches or Grease, Splints, Spavin, Ringbone, Lameness, Swellings, Tumors, and Hurts of Any Kind.

Horses and other Domestic Animals suffer from Rheumatism and stiffness of muscles, as a consequence of colds or abuse, and their value is greatly impaired when a suitable remedy is not employed to ease pain, or remove lameness or stiffness of muscles. *Uncle Sam's Nerve and Bone Liniment* is the result of practical experiment with those drugs known to possess the power of benefiting similar ailments in the human race. That assigned for animals contains the same ingredients as that intended for family use.



Uncle Sam's Nerve and Bone Liniment
For Family Use

is always put up in a White Wrapper, and should be used where a Liniment is needed in a family, as it does not stain or color the most delicate fabric. It should be kept in every house.

For Collar and Harness Galls, wash the sore parts thoroughly with water and UNCLE SAM'S HARNESS SOAP twice a day, and apply the Liniment (after each washing) with the hand, rubbing it on the affected parts. If very sore, the Liniment should be applied three or four times a day, and the animal may be allowed to rest a few days.

Tumors and Enlargements of all kinds should be rubbed thoroughly with UNCLE SAM'S NERVE AND BONE LINIMENT twice daily.

Sore Throat.—Bathe the throat with Liniment, and wrap the neck in flannel moistened with it.

Colic.—Warm Liniment, applied freely to the belly, helps relieve colic. Liniment is applied to animals in the same way as to man, and will be found equally beneficial.

Every Stock Man, every Horse Man, every Livery Man, every Farmer should keep UNCLE SAM'S NERVE AND BONE LINIMENT in the Stable, and ready for use as needed.

IT HAS STOOD THE TEST OF TIME, AND IS UNSURPASSED. Price, 25, 50 and \$1.00.

Prepared by the EMMERT PROPRIETARY CO., Chicago, Ill.

FOR SALE BY ALL DRUGGISTS.



Uncle Sam's Nerve and Bone Liniment
For Animal Use

is put up in a dark or buff wrapper, and is the most powerful and efficient Liniment ever made for the purpose. A single trial cannot fail to convince the most skeptical of its merits.

EILERT'S DAYLIGHT LIVER PILLS

A POSITIVE CURE FOR

Sick Headache and Dyspepsia, and if taken in time, are
Guaranteed to Ward off Fevers.

Other diseases in which they have wrought permanent cures are

Liver Complaint, Jaundice, Nervousness, Fever, Impurity of the Blood, Indisposition, Morbid Inaction of the Bowels, Loss of Appetite, Costiveness, Hypochondria, and all Bilious Complaints.

In using these Pills no particular or special care is necessary. Persons taking them are not required to abstain from anything in their usual diet. They are prepared from ingredients possessing properties which are most valuable in acting upon the liver and digestive organs, purifying the blood, and creating a free and healthy circulation. They are so combined as to dissolve readily in the stomach, and are sugar-coated, making them pleasant to take. In small doses they act as a laxative and alterative, being mild in their operation; in large doses they act as a brisk cathartic, cleansing the system from poisonous and putrid matter, creating healthy secretions of stomach, liver and other organs.

For dyspepsia and torpidity of the liver they are an invaluable medicine, carrying off the vitiated secretions of the liver and stomach. As an alterative, they cleanse the blood, promote a healthy action of all the vital forces of the entire body, regenerating anew the energy and vitality of youth.

These Pills are **Purgative, Laxative, or Alterative**, according to the way they are taken, and are the *only pills* ever prepared *which possess these three properties*, and are, consequently, more generally useful than any other remedy designed for similar purposes.

As a **Purgative**—they are more thorough and cause less pain than any other medicine. They restore the action of the intestinal canal in the most natural manner, so that, unlike other pills, they do not need to be continued for years, when a patient once begins using them.

As a **Laxative**—they are invaluable in catarrhal and other diseased conditions of the bowels. They act mildly, and do not increase irritation. Used in suitable doses to produce this effect, they can be depended upon to cure constipation.

As an **Alterative**—taken in small and regularly repeated doses, for several weeks in succession, they have the most profound and remarkable effect upon the whole system. They purify the blood, remove biliousness, unlock the secretions, and are of the greatest value in all diseases where the action of the bowels, the liver, the kidneys, or the skin is impaired.

Eilert's Daylight Liver Pills are Sugar-coated.

They Act upon the Stomach, the Liver, and whole Intestinal Canal.

They do not Debilitate the System, nor make constant repetition of dose necessary.

They do not Produce Pain or Gripping, or any Disagreeable Effect.

They will Certainly Prevent Fever if Taken Early.

They are Purely Vegetable, and Free from Poisonous Ingredients.

In brief, they are "Mulum in Parvo" as a Household Remedy.

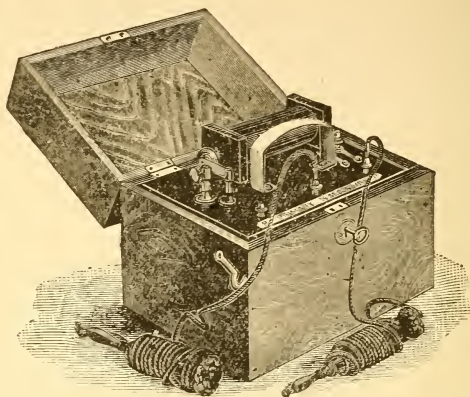
PREPARED ONLY BY THE

EMMERT PROPRIETARY CO., - - - Chicago, Ill.

YOUR DRUGGIST KEEPS THEM.

THE CELEBRATED McINTOSH BATTERIES

Adopted by the United States Government for use in Medical Department of Army and Navy.
Awarded the Gold Medal over all foreign and home competitors at the New Orleans Exposition.



McIntosh Family Faradic Battery. Price, \$10.00.

The Battery shown in this illustration is designed expressly for family use. It is durable, easily kept in order, simple to operate, and very efficient. We manufacture every kind of an instrument designed for the application of medical and surgical electricity, including

BATTERIES AT PRICES VARYING FROM \$10.00 TO \$400.00.

ELECTRIC BATH APPARATUS, GALVANIC BATTERIES, FRICTIONAL OR STATIC ELECTRICAL MACHINES,

ELECTRODES, ELECTRIC BELTS,

And all kinds of Medical and Surgical Electrical Apparatus.

ALL GOODS OF OUR MANUFACTURE GUARANTEED TO BE FIRST-CLASS.

The best physicians declare electricity to be indispensable as an aid to treatment of many formidable disorders. It has recently been discovered that some tumors previously incurable, except by a very dangerous surgical operation, can be safely and perfectly cured by galvanic electricity. Other diseases successfully treated by electricity:

Rheumatism, Neuralgia, Sciatica, Paralysis, Dyspepsia, Nervous Disorders, Swellings, Stiff and Inflamed Joints, Sprains, Inflammation, Constipation, Debility,
Female Diseases, and many other complaints.

We furnish FREE with each McIntosh Family Faradic Battery a Pamphlet of Instruction for treating diseases with electricity. The directions in our Pamphlet are plain and simple, so that any one of ordinary intelligence can use the battery successfully. For further particulars address

McINTOSH GALVANIC AND FARADIC BATTERY CO.,

CHICAGO, ILL.

Uncle Sam's Condition Powders

For the Prevention and Cure of the Diseases Common to Domestic Animals.

TESTED BY TIME AND WARRANTED.

BEST REMEDY FOR

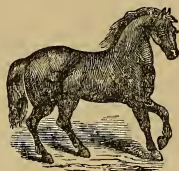
HORSES,

COWS,

SHEEP,

HOGS,

AND POULTRY.



ALWAYS FOUND TO BE

POPULAR,

RELIABLE,

CONVENIENT,

ECONOMICAL.

The most prolific source of disease among animals is *filth* and *neglect*; sometimes poverty. Horses, cattle, sheep and swine in "high condition" attain to such condition by constant care and a kindly good feeling and interest on the part of the owner or attendant, and never through neglect, or when left to shift for themselves. Access at all times to an abundant supply of *clean* water is of the first importance in stock raising. Many of the diseases that destroy animals originate in foul drinking water. Our live stock are not made of cast iron, nor have their digestive organs the power of a saw mill. A more generous diet, good water and a few doses of Uncle Sam's Condition Powders has restored to health and market value thousands of poor, unsalable animals.

Thousands of stock owners testify to the great benefits they have derived from the timely use of **Uncle Sam's Condition Powders** when disease has attacked their animals. It is equally useful for **Horses, Cattle, Sheep, Hogs and Poultry**. It invariably gives relief in

Coughs,

Colds,

Lung Fever,

Heaves,

Distemper,

Shortness of Breath,

Yellow Water,

Founder,

Hide Bound,

Disease of Kidneys,

Colic,

Bots,

Inflammation of Eyes,

Impurities of Blood,

And Worms.

It never fails to give the utmost satisfaction. It contains none of the mineral poisons so objectionable in the old style so-called Condition Powders.

Milch Cows have the quantity and quality of milk improved by the occasional use of Uncle Sam's Condition Powders in slop or feed.

Sheep are kept healthy by occasional doses of these Powders.

Hogs are protected from disease if Uncle Sam's Condition Powders are given three or four days in succession, every month or two.

Poultry thrive when these Powders are mixed with their food.

Sick Horses are cured.

Colts fitting for market may be greatly improved and very much enhanced in value by the use of these Powders.

Old Horses, almost worn out and apparently worthless, may be renovated and made to do a reasonable amount of service by the use of Uncle Sam's Condition Powders.

Be sure to try **UNCLE SAM'S CONDITION POWDERS**. Every package is warranted to give satisfaction. Put up in $\frac{1}{2}$ and $1\frac{1}{2}$ lb. packages, full weight. Price, 25 and 50 cents per package.

Prepared by the EMMERT PROPRIETARY CO., Chicago, Ill.



Foes to Childhood.

WORMS! WORMS! WORMS!

DR. JACQUES

GERMAN WORM CAKES

Destroy Worms and Remove them from the System.

More than Thirty Diseases which Affect Children Frequently Owe their Origin to the Presence of Worms.

Convulsions, St. Vitus' Dance, Fever, Diarrhœa, Dysentery, Epileptic Fits, Catalepsy, Marasmus, Cough, Dyspepsia, Incontinence of Urine, Nervousness.

There are not less than twenty distinct species of Worms found in the human body; no organ is free from a liability to become infested with some species of these loathsome parasites. It is the duty of every parent to become familiar with the symptoms which point out the presence of worms.

We were the pioneers in replacing the nauseous and uncertain vermifuges of a generation ago with a pleasant-tasting lozenge, which children take eagerly, and which is certain to destroy and remove nearly all species of worms without injury to the child.

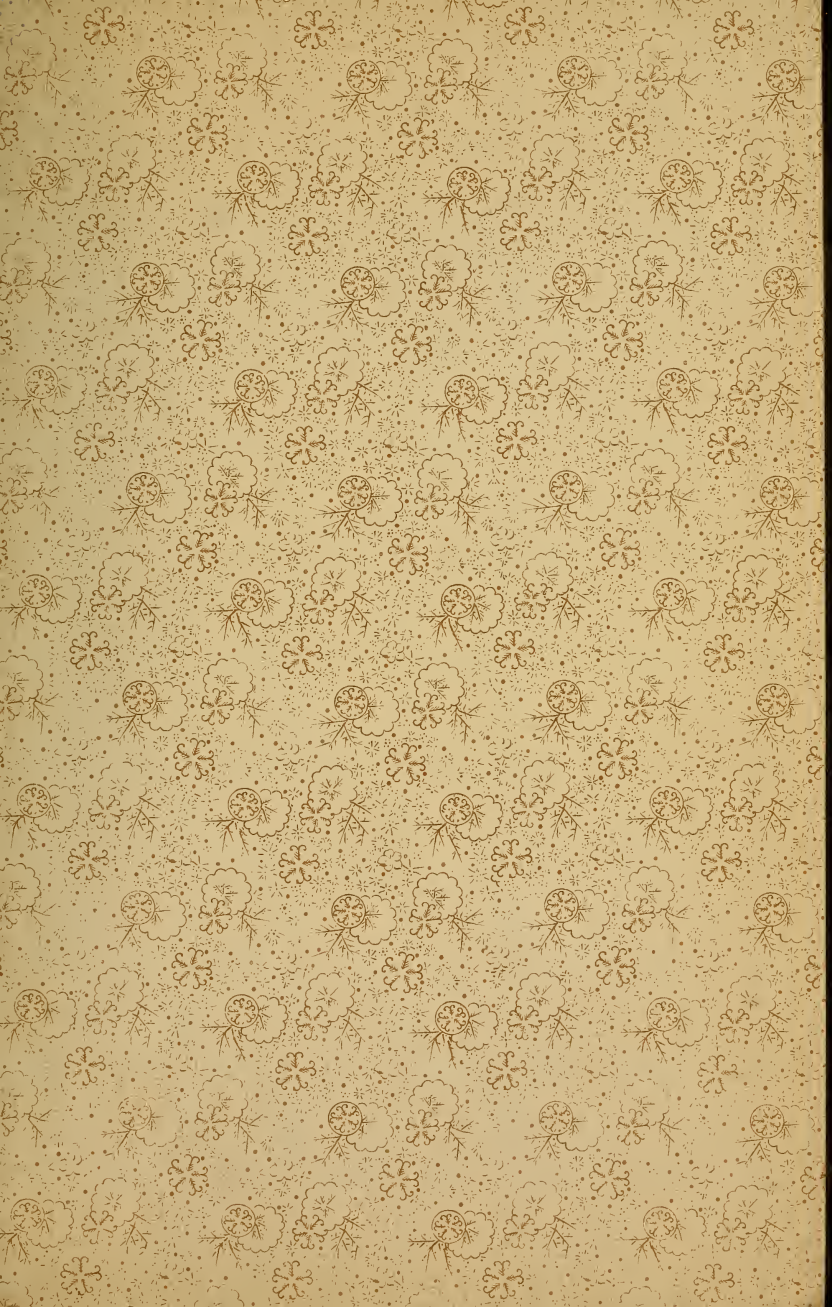
Symptoms.—Some two or three of the following symptoms will be found in a particular case; it is very rare that all are observed in the same patient. *Glassy eyes, palor about the mouth and nose, a frequent picking of the nose, coated tongue, foul breath, restlessness during sleep;* the appetite is sometimes *craving and unnatural;* sometimes there is complete *loss of appetite.* *Grinding the teeth* during sleep is a very strong indication of the presence of worms. Children lose desire to play, are listless, fretful, waste away, and when the nervous system becomes affected, some one of the diseases named above are liable to be brought on. There is, in fact, *scarcely a complaint* from which *children suffer* that is not liable to be *induced* or greatly aggravated *by the presence of worms.* Convulsions are most to be dreaded; when caused by worms they are liable to appear without noticeable warning, and the child sometimes dies in the first fit.

Parents are Cruel who allow their children to suffer from the presence of these pests, and are certainly wanting in consideration for the comfort of their little ones. A perfectly safe and efficient remedy may be found at all druggists in the form of Dr. Jacques' German Worm Cakes. *Every box of these celebrated Worm Cakes is warranted to give perfect satisfaction.*

Prepared by the Emmert Proprietary Co.,

CHICAGO, ILL.





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